

410 TO 414 D-LOK MODELS

MANUFACTURER'S STATEMENTS OF SIMILARITY

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Document History				
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INTRODUCTION

This document is intended to confirm the engineering changes to the D-LOK hook to improve its function and further prevent dynamic rollout of any attached hoisting rings or equipment.

The Lifesaving Systems D-LOK hoist hook - Part # 410-(series), currently in use on your hoists is made up of eleven (11) parts. The improved D-LOK - Part # 414-(series) – was created by changing the shape of just two (2) of those parts; the Cast Gate (#410-2) and the Cast Latch Gate (#410-3).

There were no changes made to the material used or the manner in which these parts were processed during or following casting. The parts are cast at the same facility that has cast all D-LOK gates and latches historically.

The design changes to these parts, while creating positive change in the defense of dynamic rollout, do not alter the functional use of the device for the user.

The considerations for all mechanical functioning of the new designs are explained in the following pages and show no adverse effects that would require re-testing of the device. They changes are minor but improve the hook performance and safety by eliminating the possibility of dynamic rollout of any lifting ring or carabiner from the hook gate.

Type certificate holders, hoist manufacturers, and military aircraft owners should contact products@lifesavingsystems.com for additional information if required.

BILLS OF MATERIAL

Top Level 410-A				
Item	Part Number	Part Description	Qty	Revision
1	410-1T	Hook Body, Threaded	1	A
2	410-4	Spring Bushing	1	A
3	410-6	Gate Spring	1	B
4	410-8	Gate Rivet	1	A
5	410-14	Latch Gate Assembly	1	REL
6	410-15	Gate Spacer	2	A
Sub-Assembly 410-14				
Item	Part Number	Part Description	Qty	Revision
1	410-2	Cast Gate	1	D
2	410-3	Cast Latch Gate	2	B
3	410-5	Latch Spring	1	A
4	410-5-1	Spring Mount	1	A
5	410-9	Latch Rivet	2	A
6	410-10	Spring Rivet	2	A

#410 D-LOK Bill of Materials

First table lists components used in top level assembly of current 410-A rescue hook. Highlighted green column represents the current latch gate assembly part number and revision.

Second table represents a list of components used in the sub-assembly of the highlighted latch gate assembly. Highlighted green columns represent the gate and latch part number with current revision.

Top Level 414-A				
Item	Part Number	Part Description	Qty	Revision
1	410-1T	Hook Body, Threaded	1	A
2	410-4	Spring Bushing	1	A
3	410-6	Gate Spring	1	B
4	410-8	Gate Rivet	1	A
5	410-14B	Latch Gate Assembly	1	A
6	410-15	Gate Spacer	2	A

Sub-Assembly 414-14B				
Item	Part Number	Part Description	Qty	Revision
1	410-2B	Cast Gate	1	E
2	410-3B	Cast Latch Gate	2	E
3	410-5	Latch Spring	1	A
4	410-5-1	Spring Mount	1	A
5	410-9	Latch Rivet	2	A
6	410-10	Spring Rivet	2	A

#414 D-LOK Bill of Materials

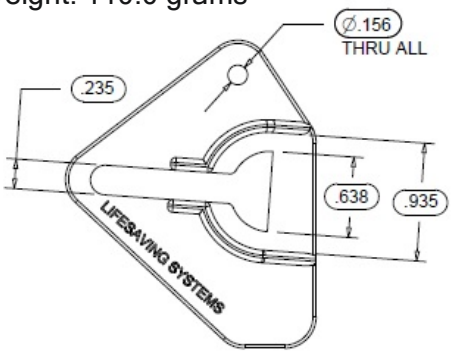
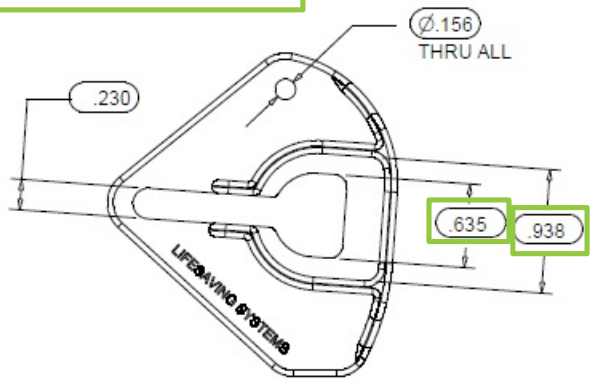
First table lists components used in top level assembly of new 414-A rescue hook. Highlighted green column represents the new latch gate assembly part number and revision.

Second table represents a list of components used in the sub-assembly of the highlighted latch gate assembly. Highlighted green columns represent the new gate and latch part number with revision.

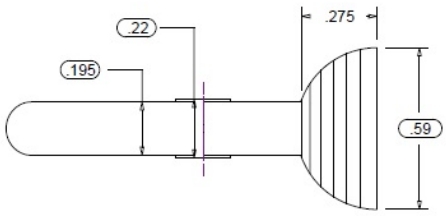
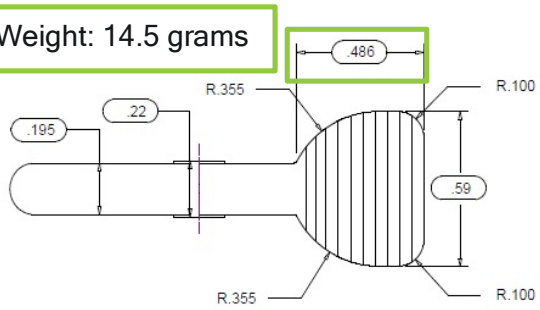
COMPARISON OF BOM DIFFERENCES

Gate and latch comparisons are illustrated in tables 3 and 4 below. The current design is shown on the left with the new modified design on the right. Dimensional and weight differences are highlighted by a green box on the new part. Material and process specifications for each part are listed under each corresponding part for comparison. No change to material and process.

TABLE 3 – GATE COMPARISON

410-2 (Current Design) Gate	410-2B (New Design) Gate
Weight: 110.0 grams 	Weight: 133.0 grams 
MATERIAL: INVESTMENT CAST CORROSION RESISTANT STAINLESS STEEL ALLOY 17-4 PH IAW SAE-AMS 5355 (CURRENT REV.)	MATERIAL: INVESTMENT CAST CORROSION RESISTANT STAINLESS STEEL ALLOY 17-4 PH IAW SAE-AMS 5355 (CURRENT REV.)
HEAT TREATMENT: DOUBLE SOLUTION ANNEAL	HEAT TREATMENT: DOUBLE SOLUTION ANNEAL
PASSIVATE IAW SAE-AMS 2700, TYPE 2	PASSIVATE IAW SAE-AMS 2700, TYPE 2
LSC PROCESS: TUMBLE IN CERAMIC MEDIA TO BREAK SHARP EDGES	LSC PROCESS: TUMBLE IN CERAMIC MEDIA TO BREAK SHARP EDGES
LSC PROCESS: PEEN, GLASS BEAD MIL-PRF- PP54B	LSC PROCESS: PEEN, GLASS BEAD MIL-PRF- PP54B
LSC PROCESS: PAINT LATCH END W/ YELLOW OIL-BASED PAINT AND 100% VISUAL INSPECTION	LSC PROCESS: PAINT LATCH END W/ YELLOW OIL-BASED PAINT AND 100% VISUAL INSPECTION

LSC PROCESS: INSPECTION DIMENSIONS DENOTED BY OVAL BORDER	LSC PROCESS: INSPECTION DIMENSIONS DENOTED BY OVAL BORDER

TABLE 4 – LATCH COMPARISON	
410-3 (Current Design) Latch	410-3B (New Design) Latch
 Weight: 10.0 grams	Weight: 14.5 grams 
MATERIAL: INVESTMENT CAST CORROSION RESISTANT STAINLESS STEEL ALLOY 17-4 PH IAW SAE-AMS 5355 (CURRENT REV.)	MATERIAL: INVESTMENT CAST CORROSION RESISTANT STAINLESS STEEL ALLOY 17-4 PH IAW SAE-AMS 5355 (CURRENT REV.)
HEAT TREATMENT: DOUBLE SOLUTION ANNEAL	HEAT TREATMENT: DOUBLE SOLUTION ANNEAL
PASSIVATE IAW SAE-AMS 2700, TYPE 2	PASSIVATE IAW SAE-AMS 2700, TYPE 2
LSC PROCESS: TUMBLE IN CERAMIC MEDIA TO BREAK SHARP EDGES	LSC PROCESS: TUMBLE IN CERAMIC MEDIA TO BREAK SHARP EDGES
LSC PROCESS: PEEN, GLASS BEAD MIL-PRF- PP54B	LSC PROCESS: PEEN, GLASS BEAD MIL-PRF- PP54B
LSC PROCESS: PAINT LATCH END W/ YELLOW OIL-BASED PAINT AND 100% VISUAL INSPECTION	LSC PROCESS: PAINT LATCH END W/ YELLOW OIL-BASED PAINT AND 100% VISUAL INSPECTION
LSC PROCESS: INSPECTION DIMENSIONS DENOTED BY OVAL BORDER	LSC PROCESS: INSPECTION DIMENSIONS DENOTED BY OVAL BORDER

*Note: The weight listed for the part is for comparison only.

410-2B Gate: 18% increase in weight.

410-3B Latch: 30% increase in weight.

CONSIDERATIONS

LIMIT LOAD/ULTIMATE LOAD/FATIGUE/DAMAGE TOLERANCE

New design of the latch and gate has no effect on the structural aspects of the hook.

The rivets used to secure the gate to the hook are identical in the new design. The new design has no effect on the gate strength performance.

SALT FOG / WATERPROOFNESS/FUNGUS RESISTANCE/HUMIDITY/FLUID SUSCEPTIBILITY

There is no material or process change to the assembly. The new design has no effect on the material stability or corrosion resistance of the hook assembly.

ICING

The fit and function of the gate-latch assembly is identical to the previous design. The extended contact area of the latch improves users leverage over the latch. The new design improves performance under icing conditions

SAND AND DUST

The fit and function of the gate-latch assembly is identical to the previous design. The new design has no effect on the hook assembly in sandy or dusty environments.

VIBRATION/SHOCK/TRANSPORTATION VIBRATION

There is no material or process change to the assembly. The new design has no effect on the material stability or impact resistance of the hook assembly.

FLAMMABILITY

The materials used are not flammable.

BONDING

The bonding path is through the hook body. Since the hook body is unchanged there is no effect on bonding performance.