

	Doc or ECO #:	ECO-70809-002	Date:	8/1/2022	Author:	JV
	Rev. #:	001				
Engineering Change Order (ECO)	Engineering Approval:	Aeg	Date:	8/11/2022	Quality Approval	aeg

P/N #:	70809	Effective Date:	August 1, 2022
Title:	Ball-spring set screw retention / receiver adhesion promoter		

1.0 Purpose / Summary

The Ball-spring plunger within the GPS assembly was exchanged with an exact replacement featuring mechanical nylon thread locker. This alleviates the need to apply Permatex blue during production assembly.

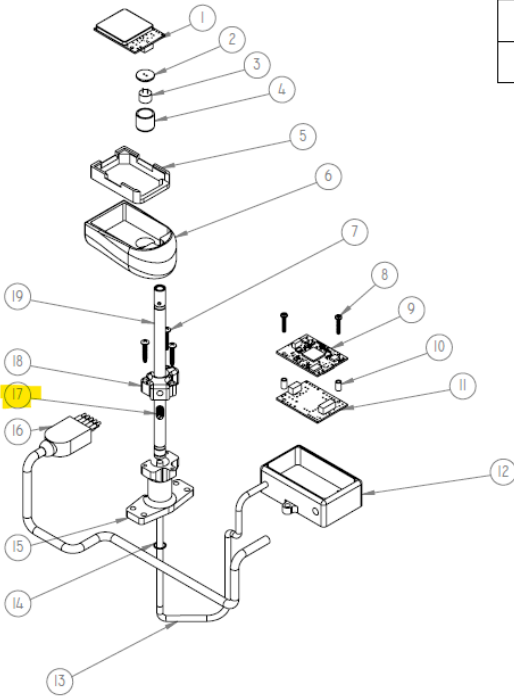
Adhesion in the Gps receiver housing has been an issue. Production yields of Gps has been dwindling. An adhesion promoter was added in the BOM and WI.

2.0 Parts Affected

Part Number	Notes	Removed	Added	Modified	REV
70809	GPS Assembly (No Rev Change)	☐	☐	☐	C
72057	Updated to "with threadlocker" version	☐	☐	☒	B
73959	1oz. tube contact adhesive plibond 20	☐	☒	☐	A

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3.0 Detail



ZONE	REV.	DESCRIPTION	DATE	APPROVED
	B	APPROVED	8/7/2019	JV
	C	ADD SERIAL# / BLACK EPOXY / UPDATED 72060	9/24/2019	JV

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	70845	MSS GPS Antenna Board	1
2	70931	MSS GPS Antenna Capacitor Housing Lid	1
3	71037	MSS GPS SUPER CAPACITOR	1
4	70930	MSS GPS Antenna Capacitor Housing	1
5	72060	GPS Antenna potting stand	1
6	72053	MSS GPS Receiver Housing	1
7	72000	PLASTITE #6 X 3/4" 18-8 SS	3
8	72090	PHPS 4-40 X 5/8" Black Nylon	2
9	70061	Programmed SPAM Board	1
10	70999	NYLON UNTHREADED SPACER, #4 SCREW X 3/16" LONG	2
11	70080	Generic SPAM Breakout Board	1
12	72059	SPAM Board potting block	1
13	72111	Polyurethane Jacketed Cable, 5mm diameter, 4-core shielded with Drain, 4C-26AWG-F-PU 5.00 BK	1
14	72058	MSS GPS RETAINING RING	1
15	72055	MSS GPS MOUNT	1
16	CW9-001M	Accessory 9 Pin Whip Male	1
17	72057	1/4-20 BALL SPRING PLUNGER	1
18	72056	MSS GPS Vertical Retractability Block	1
19	72054	MSS GPS MAST	1
20	72216	MSS GPS SERIALIZATION STICKER	1
21	70021	Epoxies 20-2621 Clear Urethane Potting (1ml)	1
22	50316	3M DP270 Clear Potting Volume (1ml)	1
23	72215	Black Urethane Resin Potting Epoxy (1ml)	1

NOTES:
1) ITEM #20-23 NOT SHOWN

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED
INTERPRET DRAWING PER ASME Y14.5-1994

REMOVE ALL BURRS AND BREAK SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED:
X.X ±0.03
X.XX ±0.010
X.XXX ±0.005
FRACTIONS ±1/16
ANGLES ±0.5

THIRD ANGLE

VideoRay

202 EAST HIGH STREET, POTTSTOWN, PA 19661
USATel: +1 610-458-3000 FAX: +1 610-458-3010
WWW.VIDEORAY.COM

TITLE: MSS GPS 2.0
PART NO: 70809
MATERIAL:
SHEET TITLE: DRAWING
REV: C [STATUS: PRODUCTION] SIZE: A SHEET: 1 OF 1

It was found that Permatex blue was **NOT** entirely curing within PN 72056 (vertical retractability block). This was due to the high chemical resistance of Delrin – the material choice for PN 72056. The new ball spring plunger has a nylon strip that acts as a mechanical threadlocker. Uncured Permatex blue could cause the ball-spring plunger (72057) to become loose over time. This could cause the GPS to have difficulty staying in the “masted” position. Using the new revision of 72057 will help consistency and reliability in future GPS builds.

Gps with new adhesion promoter. Minor cosmetic difference from current production. Note that cosmetics may be worse depending on application of the adhesion promoter

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4.0 Validation and Verification

Mechanics were tested with multiple cycles of raising and lowering the mast.

Standard QC & FAT tests were performed.

GPS signal strength tests were performed, comparing to previous stock GPS modules.

No degradation was detected in either satellite signal strength or position acquisition or variance.

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5.0 Disposition of Material



All stock of 72057 Rev A should be removed from the production floor. Removed 6/28/2021 by JV

As Defender units that feature a GPS return to production, the ball spring plunger should be replaced with this one. This is a very low priority concern but should be done as preventative maintenance when possible.

6.0 Action Items

Action	Department	Acknowledgement Initials
Update production tool kit	ENGR	JV
Notify production repair technicians of the change / disposition. Distribute new WI.	PRO	KK
Bom update / Epicor update	ENGR	JV

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7.0 Modified / Referenced Documents:

Document	Current Revision
70809 WI	D
70809 QC	C

8.0 Revision History

Date Revised (mm-dd-yyyy)	Location of Change (section, paragraph no., step no., etc.)	Description of Change Made	Name of Person making the Change
07/09/2021		Initial creation	JV
10/20/2021		Updates before pushing ECO	JV
8/1/2022		Added adhesion promoter, continuous improvement	JV