

	Doc or ECO #:	ECO-70909-72045-001	Date:	03/05/2021	Author:	RM
	Rev. #:	A				
Engineering Change Order (ECO)	Engineering Approval:	aeg	Date:	03/05/2021	Quality Approval	aeg

P/N #:	70909, 72045	Effective Date:	March 11, 2021
Title:	Spares kit, MSS Defender and Spares kit, Pro5 Updates		

1.0 Purpose / Summary

The purpose of this ECO is to update the hardware only for the MSS Defender spares kit. There has been no modification of stock items.

Co-incident with this ECO is the release of a spares kit for the pro5: [72045]-Spares Kit, MSS Pro5

2.0 Parts Affected

Part Number	Notes	Removed	Added	Modified	REV
70909	Spares kit, MSS Defender	☐	☐	☒	D
70871	SHCS M6 x 1 X 45MM 18-8 SS	☒	☐	☐	A
70870	SPRING STUD ANCHOR 8-32 X .875 18-8 SS	☒	☐	☐	A
70873	M4 NYLOCK HEX NUT 18-8 SS	☒	☐	☐	A
70874	FHMS-P M4 X 25 MM 18-8 SS	☒	☐	☐	A
70875	SHCS M4 X 30 MM 18-8 SS	☒	☐	☐	A
70883	EXTENSION SPRING 3" X .375" 302 SS	☒	☐	☐	A
70877	M6 NYLON HEX NUT 18-8 SS	☒	☐	☐	A
70879	SHCS M5 X 12 MM 18-8 SS	☒	☐	☐	A
70880	PHMS-P M4 X 6 MM 18-8 SS	☒	☐	☐	A
70882	WASHER, SLEEVE #6 .142 ID X .313 OD FIBER BLACK	☒	☐	☐	A
70961	PHMS-P 1/4-20 X 1/2" 18-8 SS	☒	☐	☐	A
70256	PLASTIC HEAD THUMB SCREW, KNURLED HEAD, M6 THREAD, 1mm PITCH, 25mm LONG	☒	☐	☐	A
70962	SHCS M6 X 22MM 18-8 SS	☒	☐	☐	A
71418	SHCS M6 X 50MM 18-8 SS	☐	☒	☐	A
71417	SHCS M6 X 40MM 18-8 SS	☐	☒	☐	A
71859	WING NUT M6 18-8 SS	☐	☒	☐	A
72177	PLASTITE #10 X 1/2" 18-8 SS	☐	☒	☐	A
73161	5/16 Inch Stainless Steel Cable Clamp	☐	☒	☐	A
70997	M6 HEX NUT 18-8 SS	☐	☒	☐	A
70998	MSS DEFENDER M6 NUT RETAINER FLAT	☐	☒	☐	A
70992	NYLON WIRE HARNESS CLAMP 3/4"	☐	☒	☐	A

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70982	PLASTITE #8 x 1/2" 18-8 SS	☐	☒	☐	A
72857	SQUARE NUT M6 X 1MM; 18-8 SS	☐	☒	☐	A
70881	PLASTITE #6 X 1/2" 18-8 SS	☐	☐	☒	A
70886	SHCS M6 X 35 MM 18-8 SS	☐	☐	☒	A
70878	SHCS M6 X 12MM RENY BLACK	☐	☐	☒	A
70912	BELLEVILLE WASHER 4MM 17-4 SS	☐	☐	☒	A
70865	M4 NYLON FLAT WASHER BLACK	☐	☐	☒	A
70867	M5 NYLOCK HEX NUT 18-8 SS	☐	☐	☒	A
70863	FHMS-P M3 X 10 MM 18-8 SS	☐	☐	☒	A
70868	PHMS-P M4 X 14MM 18-8 SS	☐	☐	☒	A
70885	SHCS M6 X 45MM RENY BLACK	☐	☐	☒	A
70884	SHCS M6 X 55MM RENY BLACK	☐	☐	☒	A
71432	PLASTITE #8 X 3/4" 18-8 SS	☐	☐	☒	A
72045	Spares kit, Pro5	☐	☒	☐	A
70869	M6 SOCKET HEAD SCREW KNOB BLACK	☐	☒	☐	A
71525	SHCS M6 X 80MM 18-8 SS	☐	☒	☐	A
71417	SHCS M6 X 40MM 18-8 SS	☐	☒	☐	A
70878	SHCS M6 X 12MM RENY BLACK	☐	☒	☐	A
71477	SHCS M6 X 85MM GLASS FILLED NYLON BLACK	☐	☒	☐	A
70865	M4 NYLON FLAT WASHER BLACK	☐	☒	☐	A
70875	SHCS M4 X 30 MM 18-8 SS	☐	☒	☐	A
70877	M6 NYLOCK HEX NUT 18-8 SS	☐	☒	☐	A
70982	PLASTITE #8 x 1/2" 18-8 SS	☐	☒	☐	A
71487	FHCS M6 X 40MM 18-8 SS	☐	☒	☐	A
71475	PHMS M6 X 12MM NYLON BLACK	☐	☒	☐	A
71432	PLASTITE #8 X 3/4" 18-8 SS	☐	☒	☐	A
70873	M4 NYLOCK HEX NUT 18-8 SS	☐	☒	☐	A
71843	PHPS 8-32 X 3/4" 18-8 SS SEALING SCREW	☐	☒	☐	A
72393	PLASTITE FLAT HEAD #6 X 1/2" TORX DRIVE	☐	☒	☐	A
70868	PHMS-P M4 X 14MM 18-8 SS	☐	☒	☐	A
70912	BELLEVILLE WASHER 4MM 17-4 SS	☐	☒	☐	A
70865	M4 NYLON FLAT WASHER BLACK	☐	☒	☐	A
70149	Nylon-Insert Locknut M3x.5 18-8 SS	☐	☒	☐	A
70846	LED MOUNT NUT	☐	☒	☐	A
70867	M5 NYLOCK HEX NUT 18-8 SS	☐	☒	☐	A
70866	FHMS-P M5 X 16MM 316 SS	☐	☒	☐	A
70863	FHMS-P M3 X 10 MM 18-8 SS	☐	☒	☐	A

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70950	Left Prop	☐	☒	☐	A
70951	Right Prop	☐	☒	☐	A
70565	5 Pin Trimmed Dummy Plug	☐	☒	☐	A
70566	9 Pin Trimmed Dummy Plug	☐	☒	☐	A
THR-ENDCP-M	Male Dust Cap	☐	☒	☐	A
70543	250g Ballast Weight	☐	☒	☐	A
70451	50g Ballast Weight	☐	☒	☐	A

3.0 Detail

3.1 Updates to 70909 Spares kit, MSS Defender

There were several ECO's that involve new hardware for updates and changes made for the MSS Defender. This ECO synchronizes the spares kit to match the current build state.

The hardware for this ECO is only for a base Defender, meaning no hardware for accessories to the ROV..

- 70871 has been deleted from the BOM.
- 70870 has been deleted from the BOM.
- 70873 has been deleted from the BOM.
- 70874 has been deleted from the BOM.
- 70875 has been deleted from the BOM.
- 70883 has been deleted from the BOM.
- 70877 has been deleted from the BOM.
- 70879 has been deleted from the BOM.
- 70880 has been deleted from the BOM.
- 70882 has been deleted from the BOM.
- 70961 has been deleted from the BOM.
- 70256 has been deleted from the BOM.
- 70962 has been deleted from the BOM.
- 71418 has been added to the BOM and listed as a quantity of 4.
- 71417 has been added to the BOM and listed as a quantity of 4.
- 71859 has been added to the BOM and listed as a quantity of 4.
- 72177 has been added to the BOM and listed as a quantity of 1.
- 73161 has been added to the BOM and listed as a quantity of 1.
- 70881 has been added to the BOM and listed as a quantity of 6
- 70997 has been added to the BOM and listed as a quantity of 2.

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- 70998 has been added to the BOM and listed as a quantity of 2.
- 71992 has been added to the BOM and listed as a quantity of 4.
- 70982 has been added to the BOM and listed as a quantity of 4.
- 72857 has been added to the BOM and listed as a quantity of 4.
- 70881 has been increased from 2 screws to 6 screws.
- 70886 has been increased from 4 screws to 8 screws.
- 70878 has been increased from 12 screws to 25 screws.
- 70912 has been increased from 4 washers to 8 washers.
- 70865 has been increased from 6 washers to 16 washers.
- 70867 has been decreased from 4 hex nuts to 2 hex nuts.
- 70863 has been decreased from 4 screws to 2 screws.
- 70868 has been decreased from 4 screws to 2 screws.
- 70885 has been decreased from 4 screws to 2 screws.
- 70884 has been decreased from 4 screws to 2 screws.
- 71432 has been changed to a Videoray part number instead of using the McMaster part number. Also, the quantity has changed from 12 screws to 15 screws.

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Figure 1: This is the complete defender hardware spares kit [70909] in their own separate labeled bags.

3.2 Updates to 70909 Spares kit, Pro 5

Previously there was no separate spares kit for the PRO5. A new kit was created for this ECO.

4.0 Disposition of Material

- Update all stock to this revision.
- The Defender hardware kit on the production floor has been updated to match this ECO

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5.0 Action Items

Action	Department	Acknowledgement Initials
Update Epicor.	Purchasing	RM
Update BOMs.	Engineering	RM

6.0 Modified / Referenced Documents:

Document	Current Revision
WI-70909	A
WI-72045	A
BOM-70909	D
BOM-72045	A

7.0 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
3/10/2020	All	Init	RM/AEG