

	Doc or ECO #:	Eco-71968-001	Date:	4/25/19	Author:	JK
	Rev. #:	A				
Engineering Change Order (ECO)	Engineering Approval:	aeg	Date:	5/25/19	Quality Approval	DO

P/N #:	71968	Effective Date:	April 25, 2019
Title:	Pro 4 Direct Drive Vertical Thruster Update		

1.0 Purpose / Summary

This ECO captures the update from geared brushless vertical thruster to a direct drive brushless vertical thruster.

The new vertical thruster assembly is fully backwards compatible with all hulls, cartridge seals and props.

2.0 Parts Affected

Part Number	Notes	Removed	Added	Modified	REV
VR-PRO4-02-0001	End of Life	☒	☐	☐	
70035	Update Description to be more generic	☐	☐	☒	A
71809	New tekina direct drive motor	☐	☒	☐	A
71880	New direct drive shaft	☐	☒	☐	A
71881	Motor mount	☐	☒	☐	A
71885	Motor shield	☐	☒	☐	A
71968	General assembly replaces VR-PRO4-02-0001	☐	☒	☐	A

3.0 Detail

Thruster Package Vertical Gearbox (Pro 4) **[MAR-025-GRB]** has gone end of life.

The recurrent issues with the gear box and the press fit Loctite used on the shaft assembly lead to the selection of a direct drive brushless motor and a one-piece shaft to replace the gearbox motor assembly. This eliminates the need for a gearbox altogether and alleviates the noise, shaft play, and two-piece shaft adhesion issues that go with the design utilizing a gearbox.

A new motor **[71809]** was selected, a new shaft **[71880]** and mount assembly was designed.

The retaining ring **[70035]** which historically came with the motor was given a more generic description, no substantive change was made to that part.

Quality inspection procedures and forms were updated to accommodate the new design.

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Cease rework upon acceptance of all new materials for Thruster Assembly Vertical Direct Drive Brushless (Pro 4) **[71968]**

Remove from inventory and dispose of Thruster Assembly Vertical Drive Train Brushless (Pro 4) **[VR-PRO4-02-0001]** once **[71968]** is in production.

5.0 Action Items

Action	Department	Acknowledgement Initials
Production Testing	Quality Assurance	DO
Dispose of Legacy Materials per Disposition of Material	Quality Assurance	EG
Update Epicor	Engineering	RN
Update Vertical Thruster QC inspection	Quality Assurance	DO
Provide PPI with all required information	Purchasing	NS

6.0 Modified / Referenced Documents:

Document	Current Revision
Click here to enter text.	Click here to enter text.

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
04/26/2019	-	Initial Draft	JK

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