

From: Dale Graves grda@mbari.org
Subject: Re: Mini ROV, Elmo Whistle
Date: October 16, 2019 at 10:04 PM
To: Todd Gregory tgregory@gregory-designs.com
Cc: Alana Sherman alana@mbari.org, Levi Unema lgunema@mtu.edu, Bobby Mohr bobbymohr@gmail.com, Jeffrey Laning jlaning66@gmail.com, David Lovalvo david.lovalvo@tgfoe.org, Dave Wright davewrightspace@gmail.com, Karl McLetchie karl@seaknowledge.com, Jose Rosal jrosal@mbari.org

Hi Todd,

Here is the part number:

Digikey part number 535-10999-1-ND
ASFLMB-4.000MHZ-LR-T MEMS OSC XO 4.0000MHZ LVCMOS SM

DigiKey shows 1400 in stock. Your controllers should be fine once you replace the oscillator or at least the one that we replaced was good after the fix. If you or your EE's have any questions please feel free to contact Jose Rosal who runs our Electrical tech group and did the repairs on my spares last month (He is cc'd in this email).

Good luck and let me know if you need to borrow any spares.

Dale

From: "Todd Gregory" <tgregory@gregory-designs.com>
To: "Dale Graves" <grda@mbari.org>
Cc: "Alana Sherman" <alana@mbari.org>, "Levi Unema" <lgunema@mtu.edu>, "Bobby Mohr" <bobbymohr@gmail.com>, "Jeffrey Laning" <jlaning66@gmail.com>, "David Lovalvo" <david.lovalvo@tgfoe.org>, "Dave Wright" <davewrightspace@gmail.com>, "Karl McLetchie" <karl@seaknowledge.com>
Sent: Wednesday, October 16, 2019 5:45:00 PM
Subject: RE: Mini ROV, Elmo Whistle

Hi Dale

Thank you for the quick reply. This is tremendous news: a. it confirms what we've observed and makes our suspicion of a pressure-related failure more certain, and b. you've provided some hope that we can execute a fix.

If you are able to get us the part number for the oscillator, we'll order tomorrow (Thursday) and get the parts in our hands as early as Friday. We will have two experienced EE's on the ship this weekend from our team working on the motor rebuilds: Levi Unema and Bobby Mohr. We'll have a fighting chance of modifying our three new spares, and retrofitting the controllers already installed in the remaining good thrusters and rotators.

I have a few follow up questions:

-Is it possible you have stock of those Oscillator parts, in the case we can't source them in time?

-Based on your experiences, is it remotely possible that we might be able to repair the failed controllers by swapping this component? Or is it likely the failed oscillator results in fried components on the Elmo boards?

-Your four good (modified) spares are certainly of interest to us. Thank you. Let's talk tomorrow about the logistics of borrowing and/or buying-replacing those controllers. As far as getting them in our hands, we could get a rental car and drive to Moss Landing early on Friday. Or if you have a burning desire to come visit San Francisco and visit the Reuben Lasker to see GFOE's vehicles, you are more than welcome!

Thank you,
Todd Gregory

From: Dale Graves <grda@mbari.org>
Sent: Wednesday, October 16, 2019 7:58 PM
To: Todd Gregory <tgregory@gregory-designs.com>
Cc: Alana Sherman <alana@mbari.org>; Levi Unema <lunema@mtu.edu>; Bobby Mohr <bobbymohr@gmail.com>; Jeffrey Laning <jlaning66@gmail.com>; David Lovalvo <david.lovalvo@tgfoe.org>; Dave Wright <davewrightsplace@gmail.com>; Karl McLetchie <karl@seaknowledge.com>
Subject: Re: Mini ROV, Elmo Whistle

Hi Todd,

Sorry to hear about the ELMO failures, but we have also had some pressure related issues with new Whistles that we have purchased on more recent projects. The Mini has continued to make dives to 1500 meters with the original Whistles and no failures, but recent purchases of the Whistle have failed on our Ventana ROV below 1000 meters. We have narrowed it down to the oscillator failing at pressure and have come up with a replacement part that can be changed out, but unfortunately, the oscillator is buried deep in the middle of the drive and requires quite a bit of disassembly to get to it.

I'm currently offshore Hawaii and will need to dig around to find the part number, but will send that info to you as soon as I find it. I have 4 drives that have been retrofitted with the new oscillator that I could loan you to get you through your cruise, but would need them back as soon as possible. The drives are back in Moss Landing and I will be flying back on Thursday and we can figure out to get them up to you. My cell number is 831 345 0271.

Regards,

Dale

Dale

From: "Todd Gregory" <tgregory@gregory-designs.com>
To: "Dale Graves" <grda@mbari.org>, "Alana Sherman" <alana@mbari.org>
Cc: "Levi Unema" <lgunema@mtu.edu>, "Bobby Mohr" <bobbymohr@gmail.com>, "Jeffrey Laning" <jlaning66@gmail.com>, "David Lovalvo" <david.lovalvo@tgfoe.org>, "Dave Wright" <davewrightsp@place@gmail.com>, "Karl McLetchie" <karl@seaknowledge.com>
Sent: Wednesday, October 16, 2019 1:13:51 PM
Subject: Mini ROV, Elmo Whistle

Hi Dale and Alana

You might remember me from a few years ago. I'm the Mechanical Engineer that helped take your Mini ROV design and morph it into "Yogi" for GFOE. We are currently offshore of CA on the NOAA ship Reuben Lasker operating Yogi with its depressor vehicle, Guru. A link to our live video feed is [here](#).

Two nights ago, we dove to Yogi's deepest depth yet, ~950m, and suffered a failure of four thrusters and two rotators. It appears that the Elmo controllers on all of these motors are dead. We have some more postmortem testing to do, but all signs currently point to dead controllers.

I wanted to share this experience with you, in case this information is helpful in some way. But I'm also hoping you can commiserate with us and let us know if you have ever experienced pressure-related failures of your Elmo components, or any of the other Pressure Tolerant electronics on your Mini ROV. We have a lot of common parts: Vicors and Elmos with their custom PCB's.

We will arrive in San Francisco tomorrow afternoon, for a scheduled port stop. We'll depart SF on 10/22 and will be offshore of central/southern CA for another 3 weeks of operations. The port stop gives us a few days to rebuild our dead thrusters, but we only have 3 spare Elmo Whistle controllers (p/n WHI-20/60R). Is it possible that you have any stock of spare controllers that we could take, then replace them by shipping you new parts? I'm copying the team of GFOE electrical engineers on this message, as they're eager to know if we can get our hands on additional spare Elmo controllers.

Many thanks,
Todd

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Todd Gregory, PE

Gregory Designs, LLC

30 Watch Hill Way

South Kingstown, RI 02879

401.741.4751

[tgregory@gregory-designs.com](mailto:tgregory@gregory-designs.com)

[www.gregory-designs.com](http://www.gregory-designs.com)

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