



## Maxwell Propulsion Systems, Inc.

*Super Novo Vias*

19132 59<sup>th</sup> Dr. NE

Arlington WA 98223

360.474.8118 Phone; 360.474.8299 Fax

### Maxwell Propulsion Systems February Update

This month's update brings news of excellent progress, both in terms of improved weather in the Pacific Northwest, product availability, and customer support.

#### REMINDER!! MPS HOURS ARE MONDAY THROUGH THURSDAY

As announced last month MPS has moved to working four 10 hour days. Our official working hours are 6:30 am to 5:00 pm Monday through Thursday. As always, there is a chance that someone will answer the phone during off times, but don't be surprised if you get our answering machine!

#### VOLTAGE MONITOR

Last month we announced the availability of a new voltage monitor. Recently, we reviewed some of the other monitors that are commercially available. In a separate posting we will provide the results of this review as well as describe the MPS system more thoroughly.

#### VARIABLE PITCH PROPELLER

Thanks to Peter Nalis, yesterday we mounted the new propeller on his plane and did some preliminary flight testing. Over the next week, we will make adjustments to the motion limit guides in order to correctly match the fine/coarse pitch/rpm to enable maximum performance. As soon as we have the final data, we will post the data.

Several folks have inquired about the prop pitch indicator; at this time, we regret that the current version is not retrofittable to the CAP 200, however, should there be adequate interest to support the development costs, we would be willing to look into the possibilities. So, please let us know if you are seriously interested.

#### PSRU

No major news regarding the design/development of the new PSRU, only that it is progressing well. The solid model is nearing completion for all key components. We received the clutch and several other components and have identified a machine shop that has a 1-2 week lead time for prototype parts. Also, our key vendors are aware that a significant number of new parts will be heading their way. Given this, we remain cautiously optimistic that deliveries can begin late 2nd quarter 2007.

#### A40 INSPECTION

We are strongly recommending that anyone who has experienced hard-start problems with their NSI engine package remove their A40 PSRU to inspect for damage. At a minimum, we recommend replacing the clutch.

Resolution: 1) We have a supply of clutches in stock and will make them available at our cost of \$170 plus shipping. 2) should any damage exist on inspection of the A40 components, please contact us discuss alternatives for correcting the problem.

## PINION GEAR INSPECTION

In addition to the A40 inspection, we also recommend that the pinion gear be inspected. The two key issues are whether 1) the bolt bottoms out on the washer, and 2) there is a good fit on the taper between the pinion gear and the input shaft.

Resolution: 1) If the bolt does not bottom out, we have a new (shorter) bolt that is available for \$5.00 + \$1.00 shipping (domestic). 2) if the pinion gear and input shaft are not well matched, please contact us to discuss alternatives for correcting the problem.

## OTHER POTENTIAL MODIFICATIONS

While the A40 and Pinion Gear are off, customers may consider changing over to the new MPS gear cover. The new cover is made of solid aluminum and has a larger diameter inner bore that allows the driven gear to be removed without removing the gear cover. The gear cover and o-ring are available for \$223 + shipping.

If not upgrading to the new gear cover, we have an oversized o-ring that can be used on the original gear cover that will eliminate the need to use gasket sealant on the gear cover. These are available for \$3.50 +\$1.00 shipping (domestic).

## ELECTRICAL RETROFITS

These upgrades continue to be “best sellers” that are successful at eliminating TEC3-related hard starting problems. Thus, they serve as protection for damage resulting from pre-ignition and/or backfires. Given the continued interest, we have decided to extend our offer to NSI customers of \$3950, a discount of \$1000 off the list price of \$4950.

## ELECTRICAL SYSTEM SUPPORT KITS

We have put together some kits that should prove useful for customers with the MPS electrical system. These kits include:

MPS Electrical Support Package – \$75.50

Includes Crimp Tool, Kit #1 and Kit #2

Crimp Tool – \$45.00

MOLEX Open Barrel Crimp Tool

Kit #1 AMP CPC Removal Tool & Pin Kit – \$ 25.00

1 AMP CPC Removal Tool

5 AMP CPC Pin 24-20

5 AMP CPC Pin 18-16

5 AMP CPC Socket 24-20

5 AMP CPC Socket 18-16

Kit #2 AMP D-SUB Removal Tool & Pin Kit – \$12.50

1 AMP D-SUB Insert/Removal Tool 91067-2

5 AMP D-SUB Pin 24-20

10 AMP D-SUB Socket 24-20

Voltage Monitor Installation Kit – \$11.50

1 DIALIGHT LED, 12V

1 AMP HOUSING

1 AMP SHELL

10 AMP CONTACTS

## CUSTOMER SUPPORT SERVICES

We have had many calls regarding difficulties with cold weather engine starting. In an effort to assist, we have done a variety of things.

## FUEL MAP MODIFICATIONS

We have modified the MPS fuel map to improve starting at temperatures down to 32 degrees F. If you are interested in getting a modified fuel map, please contact us for details of how this might be accomplished.

## STARTING AND COLD WEATHER STARTING

We did some research to identify support options that we believe would significantly improve starting in general, and cold weather starting in particular:

Engine Block Heater

Part number: A0910AS000

Cost \$25.00

Available online [www.subaruroparts.com](http://www.subaruroparts.com) or from a Subaru Dealer.

Battery Warmer

Model number: BH-60

Cost \$30.00 + S&H

Available online [www.padheaters.com](http://www.padheaters.com)

## WIRE SIZE RECOMMENDATIONS

MPS electrical drawings include wire sizes for the complete engine system. For builder-added components such as flight instruments and radios, we recommend using the following process and table to determine wire size for short lengths found in the cabin.

- 1) Determine the amount of current used by the device by measuring with an ammeter or by finding the max current in documentation from the manufacturer.
- 2) Once the load per circuit is added, choose an appropriate size circuit breaker.
- 3) Next select a wire size based on the circuit breaker size, rather than the actual load each device uses. Note: Given the mechanical strength of a single wire, 20 AWG is the smallest size recommended for wires not supported in bundles. Many devices such as radios and trim systems may have multiple conductor harnesses made from wires smaller than 20; these are acceptable.

AWG	AMPS	AWG	AMPS
2	108	4	81
6	60	8	44
10	33	12	25
14	19	16	13
18	9	20	6

## Batteries

The MX1 engine management system uses a maximum 11 amps of power to run the two computers, four fuel pumps, and entire spark and injector systems. When deciding which batteries to use, we recommend you determine the amount of reserve capacity needed in the event of alternator failure. As an guideline, the FAA requires two hours of battery reserve for certified engines that are electronically controlled. Currently, we are recommending the use of two Odyssey PC 925 batteries. Each has 28 amp hours.

## MPS WEBSITE

After discovering we had an in-house Website designer, Colin Gillespie, we have made significant progress on getting our Website up and running. Our first goal is to get the inventory-reduction sale photos posted and begin the process of getting these materials in the hands of those who could benefit. The launch date is scheduled for end of February 2007!

#### **BETTER BUSINESS BUREAU MEMBERSHIP**

Last week, Maxwell Propulsion Systems, Inc. was invited to join the Better Business Bureau. Consistent with the BBB standards, we have every intention of continuing to conduct our business with integrity, honesty and fairness to our vendors and customers. Check out our listing at [www.bbb.org](http://www.bbb.org).

Best Regards and Safe Flying,

Maxwell Propulsion System Staff