Well, there's nothing really to construct with the MT Propeller. It came completely assembled from Germany. You can buy the prop directly from Team Rocket, or any other prop dealer that works with MT. I bought mine through Jim Ayres at LESSDRAG.COM . The price there was just a bit less than with Mark. Either way, it's a great deal. And you still have to pick the thing up at an international airport. As a matter of fact, you just about have to buy the prop a first class ticket to get it delivered. Well, a good portion of the roughly $1100 to get it delivered is assembly and crating (in a triangular cardboard box). At any rate, even though there's no building with this prop, I thought I'd give it it's very own page because IT COSTS SO MUCH! :-)

The Propeller Decision

The propeller I chose was a 3 bladed composite prop from MT. It is specific to the F1. It is model number MTV-9-B-C/C-198-52 . I considered other props including a two bladed Hartzell (which is a tad faster and a bunch cheaper), but the allure of the MT was too great. The prop is made using certified techniques and quality products. The company has a track record with props all over the world. The prop is light and quiet. The MT 3 blade composite weighs the same 65 pounds as the two bladed Hartzell. The MT is also beautiful, in my opinion, in it's appearance and engineering. There are lots of great propeller manufacturers out there, but I chose to go with MT.

I decided to have my prop coated black gloss on the front with yellow tips. The back side is supposed to be flat black to keep reflection down. I ordered the spinner just primered because I have no idea what colors my paint scheme will end up. I almost went ahead and had it painted yellow. Sure enough, had I chosen the factory yellow, it probably wouldn't match any yellow I wanted, or I'd just want a totally different color. So primer it is, for now.

The MT prop is a "composite" prop made of wood laminates and some plastic, with a metal hub. Mostly the blades are wooden. Some prop manufacturers are using combinations of carbon fiber, fiberglass and other "composite" materials. MT's "composite" prop is defined using the truest sense of the word, meaning multiple materials, not just epoxy resin or fiberglass cloth as the word has become synonymous.

I ordered an "aerobatic" prop. My thought there was not so much to have a prop more suitable for aerobatics, but to have a prop that IMHO is safer and perhaps smoother. In "normal" aircraft the constant speed propeller is nearly flat without oil pressure. My understanding is that with an aerobatic prop, when stopped, the prop is more in a full feathered orientation. I think this in part is why it is safer. If something happens and you lose control of the propeller, it more or less goes full feather and can prevent an engine overspeed. Not that if this problem occurs the engine is going to be of much consequence. Perhaps it might keep the prop from flying off the airframe, though, and thereby keep the engine in the cowling. The aerobatic prop is counterweighted. Supposedly it is a bit more smooth running. Rumor has it that you really can't tell the difference because the prop is so smooth and

relatively quiet compared to many.

I also ordered a hydraulic propeller governor (model number P-884-3) with my prop. Evidently the aerobatic prop I ordered works somewhat backwards from a typical constant speed hydraulic prop, so you have to be careful to get the governor set up correctly to accommodate the "reverse oil flow". Also, I had the prop governor come with a port for an aerobatic oil reservoir. In sustained inverted flight, you can lose oil pressure to the prop governor. Having access to an accessory oil reservoir can extend the time available flying inverted, even without an aerobatic oil system. Best of all, this upgrade was FREE! Basically, they drill and tap a hole and put a plug in it. No biggy. If you don't want or need the extra port and plug, why take the remote chance that the plug could work out of the governor housing and spoil your day? Perhaps you should just leave it out. Well, I'm probably not going to add the reservoir, but at least I have the option, without changing governors.

The way my propeller deal worked, I had to pay half of the total cost up front. The estimated production time is about 8 weeks, give or take. Then when the prop is near production in MT's schedule, the prop and shipping has to be paid in full. That means the funds have to be in MT's hands, supposedly before they actually construct the propeller. I don't think they build props until they have a completely paid order, bu that may depend on your propeller vendor. Once MT gets the funds, then usually it's a matter of a couple weeks until the prop is assembled and ready to ship. In my case, it seemed to take a little longer. I think my prop was put together, then sat on the dock longer than necessary. At any rate, I didn't get it quite on time, but not severely so. It's only a week or two late.

What I was told was to pay up front, then sit back and wait for the importer to call. When the prop was past due, I called the importer and then emailed Jim Ayres. Kuehne & Nagel at the Indy branch had no idea and nothing in their computer at that point. They don't get the information until the items are actually logged in and the shipment process begins with the merchandise in transit. Evidently my prop was still in the warehouse at MT, or in transit to France, where it is airfreighted by Lufthansa to the US. Jim made an inquiry and found out that since the MT guys were at SNF, things got set back a bit, and my prop was victim of that deferral. Soon as SNF was over, though, Jim had the tracking information, and my prop was on it's way.

I ordered my prop and governor together. Jim sent the governor direct to me from his world wide headquarters in California. He evidently ordered a batch of them. The governor is specific to the aerobatic/counterweighted constant speed prop.

The Import Logistics

I have never imported anything, so this is all new to me. I hope the following explanation helps some of you understand what happens when you act as your own propeller importer.

I elected to have my propeller completely assembled by MT at the factory in Germany. The arrangement was that the propeller would be delivered to an international airport of entry, where I would take possession of it. There must be a U.S. Customs office at the airport in order for a MT prop to be delivered from Germany to your location. MT Propeller uses Kuehne and Nagel, which is an import company that does worldwide freight by land, sea and air. K&N arranges transport of the propeller crates from Frankfurt, through Nuremberg, to France, then to the United States through the customs system to a customs warehouse at your chosen airport. It amazes me how fast the process is, and how far the crates travels on it's trip to my airport.

K&N is essentially a freight company. I, as purchaser of the propeller for personal use in this case,

am the importer. My understanding is that K&N is merely responsible for getting the crates to my bailiwick. Once I am notified by the shipper that my freight has arrived, it is my responsibility to get my goods through customs.

If you are unable to get to a port of entry to pick up your propeller in person, you can hire a broker to legally act as your agent, and do the customs documentation for you, as well as arrange "local" delivery to you. More on that in a minute.

Since the propeller costs over $2000, I was advised by Customs that I need a customs AGENT to make a "formal entry" for my goods. I'm not sure this is correct and I don't understand the impact on my delivery, but the US Customs website is wrought with "formal entry" remarks. That makes it sound like you have to pay an import broker to be your import agent and pay them extra bucks to shuffle extra paperwork. Customs may be inclined to levy other duties and tariffs as well. I've been trying to find out just what all this means and how it works, but so far it's clear as mud. (It wasn't a problem, and there was NO hold up or extra charge!)

Some MT purchasers have found that upon the prop arriving at the international airport destination, the purchaser has had to pay a broker extra service fees. Most have not. In fact most builders that are getting an MT prop are only paying the customs fee ($5 - 9) and perhaps a dock or warehousing fee of about $25 over and above the cost of shipping the prop. Evidently these fees can vary from airport to airport depending on local interpretation, even within the same K&N company and using the same customs office (the US government!). It's starting to sound to me like it depends on how lucky you are, and whether or not the people you are dealing with got any nooky the night before, phase of the moon, etcetera. (Customs didn't even charge me!)

I tried to preempt any potential problems beforehand by calling ahead to K&N and US Customs to clarify the procedures and fees. Well, I may have stepped on my own dick. ALL the folks I talked to at all of the offices concerned were extremely nice and quite helpful, but I didn't get anywhere (except more confused). I think part of the problem was that I was trying to explain my situation, but lacked the vocabulary to communicate properly. I don't know "import speak". The fact that the propeller was nowhere to be found "in the system" and could not be tracked at that point did not help. In retrospect, my recommendation is to wait for the call that your goods are ready, then show up, play dumb, and stick to the premise that you do not need an agent, and that you are capable of the clearing the crates through customs without extra assistance or expense. I would just about bet you that if you take this tack, the speed of retrieval of your documents and your merchandise will be in reverse proportion to the amount you pay for "import services".

Your prop and shipping fees are probably paid in full prior to your propeller's lengthy trip, so you really shouldn't owe K&N anything when you pick up your documents. However, Customs may say that since your prop cost over $2k that you must have a broker AGENT instead of just a shipper. In other words it is possible that Customs may require you to obtain an agent to make "formal entry" of your merchandise. If you have to contract K&N (or someone else) as an AGENT (legal import broker with power of attorney) instead of just a shipper (and paperwork shuffler), then you are going to have to cough up extra money to them. The sad comment is that in this case, the AGENT and the BROKER do much the same thing, they just make more money by acting as an agent and vouching for you that you are who you say you, are and that everything is up to snuff. And there is no consistency in this matter between branch offices. At least that's the scuttlebutt. And again, I don't think this is how it's supposed to work. I think we are supposed to be able to be our own importer without an agent for personal items, even with a "formal entry" and high dollar value, if we retrieve them in person. We cannot, however act as our own "broker agent" if Customs requires more or extra documentation. I'm still not sure how this works, and once this debacle is over, I hope to be able to explain it better. (It

was a non issue, and no added explanation is warranted. Don' worry 'boud it!!)

Even though you may be paying to have your prop delivered to an international airport, not all airports are the same. Indianapolis does have a Customs branch, but Lufthansa (K&N's freight subcontractor) does not fly into Indy. Therefore, K&N shipments from Germany only go to Chicago by airfreight on Lufthansa. That's where the airfreight portion stops in my case. At that point, customs has to approve, in writing, the movement of the crates to a different location. Since the propeller isn't going through the whole customs process to be "released" in Chicago, a Customs agent in Chicago has to authorize the crates to be relocated. This usually eats up a day, sometimes more. Then the crates are actually taken from ORD to Indy by truck.

In this neck of the woods, Towne Air Freight is Lufthansa's contracted trucking company. That's how my MT propeller ends up in Indy. Yes, the prop comes to Chicago by air, then down to Indy by truck. I guess this is why shipping charges for the assembled MT props can only be approximate in the beginning, give or take $150. Because sometimes a prop is unloaded from the plane and it stays right there (which should be cheaper), sometimes it has to be relocated through multiple waypoints to your international airport. MT hires K&N to ship the prop, and K&N sets the fees for MT after they figure out how, when and where the prop is going to be shipped. Therefore, if you have a choice, use an international port of entry where Lufthansa flies and you might not only save a few bucks, but your propeller will probably be available for pick up a bit more quickly. (Towne Air Freight got a $20 handling fee and happily loaded the 6 foot triangular box in my short be Chevy)

For those of you who may not find it convenient to get to an international port of entry airport to pick up your MT propeller in person, you can hire a customs broker to act as your legal broker agent to get your prop through customs, and then physically deliver your prop to you. K&N can act as your agent, but you will probably find it cheaper and easier to get a small local broker to do both the agent/brokering and the cartage. Expect the broker fees in this case to run upwards of $100- 150, and then there will be trucking charges for delivery on top of that. You will be required to sign a power of attorney to allow your agent to get customs to release your merchandise on your behalf, and then pick it up. Although your agent will have to eventually have a signed original POA on file, this all can initially be done over the phone, with documents expedited by fax or email. (I went and picked it up myself. 4 stops, 1 hour, $20. That's IT!!!!)

I was told by the import representative at TAF that they hold merchandise for one week at no charge, but after that they charge for warehousing. Now I just have to wait for the prop to show up, then figure out how and when I can go and retrieve it. (When I went and got my prop, there was no storage fee, but it would have been $15 a day extra after the first week in the warehouse.

Tracking the Propeller Shipment

Jim Ayres at LessDrag emailed me the shipping/tracking information for my propeller. Evidently that information came from MT in Germany. I was able to go to Lufthansa's tracking website and use the M.A.W.B. number (master airway bill) and track the shipment from MT. Well, actually, this tracks a bulk shipment from France and in my case the shipment goes to ORD. I was shocked when I found out that my prop was in one container and weighed 9740 kilograms!!!! Oops. I guess that must be one LARGE container with a bunch of stuff coming to K&N (and others?) from France into ORD.

Jim also provided a H.A.W.B. number which is an in-House number (house airway bill) that is probably K&N specific.You can go to Kuehne and Nagel's customer portal and at the lower left hand corner of the front page, there is a search box. Simply click the HAWB button, cut and paste in the HAWB number, then click search and VIOLA! Up comes the shipping itinerary, just like UPS or FED

EX. You do not even need to log in to track your prop. (just take the itinerary with a grain of salt... it's only an "estimation")

Propeller Transit

My propeller departed the MT factory on 4/22/05. On the 23rd, it arrived in Nurnberg. On the 24th it was in Frankfurt.

I was told that my prop was supposed to hit the dock in Indianapolis on a Sunday (4/24/05) sometime (it didn't). K&N and Customs said that if everything goes just right, I could pick the prop up on Monday (I couldn't). What I did was call TOWNE AIR FREIGHT early on Monday AM and give them the airway bill number associated with my prop and see if it was in their inventory (it wasn't).

4/25/05 The prop wasn't ready to pick up when I was told. However, it was never promised at a time or date, and the tracking documentation was confusing and misleading (if not incorrect). It was a bit disconcerting, but not totally unexpected. My problem was that I was working with a very tight time frame, a one day window to pick the propeller up in Indy due to other personal commitments. The prop may have to sit over in TAF's warehouse for a while until I'm able to go over and claim it.

Well, so far this was a minor bust, my window of opportunity expired. At this point, I am back to square one, waiting for two calls. I should hear from TAF when they physically have the prop crates, and I should also hear from Kuehne and Nagel when they have the paperwork ready to go.

4/26/05 The K&N website shows the expected arrival at destination as Indy on 4/24. The website shows on the next line of the tracking page that the crates actually arrived at ORD 4/24, and then the next line shows that the docs were on hand at the arrival airport 4/25 at 8 am. I was told this is too late for the prop to get approval for transport to Indy and get pickup on 4/25. There are many trucks that go daily from ORD to TAF in Indy, mostly in the overnight time, but none during the day to move the crates down to Indy to get through the system here. At any rate, even though the tracking system initially showed the prop crates as going all the way to Indy, it later showed the actual destination as Chicago, and *then* the paperwork showed in K&N's system the next day. And I'm going to ASSume that the paperwork is in Chicago with the prop crates. I have a full schedule of patients the rest of the week, so I can't do anything about retrieving the propeller now. I'll be curious to watch the website and wait for calls from the shippers.

4/27/05 This morning the K&N website reads "dispatched to consignee" as of 9 am yesterday. I have to assume (again) that this means the crates are in the hands of Towne Air Freight, and that they are probably now in the TAF warehouse in Indy. Perhaps today I will get a call telling me my import merchandise is ready. At this point, the longer it takes for them to get my prop ready to bring home the better. Because of my own logistics, I can't go get the prop until later next week at the earliest, so I hope the process drags on a bit. Less warehousing fees that way.

4/28/05 Still no word from K&N or TAF. The K&N website has not changed since yesterday. Guess the prop is back in Limbo. That's OK for now, because unfortunately, I won't be able to get the prop until later next week. I sure would like to know that it's here and ready to pick up, though. Maybe today? Sigh...

4/29/05 No word yesterday from anyone on my shipment. I went back to the Towne Air Freight website and played around. I was able to use the Master Air Way Bill number from K&N and cut and paste it into TAF's tracking page (no spaces or dashes). After some trial and error I checked the "C or D PRO" button and got a bunch of information on the next page. That listed essentially everything

that was in that particular container that came on Lufthansa. Most of the goods were shipped by Kuehne and Nagel. The listing had a lot of information including city of destination and the shipping status of that item. It looks like a lot of 2 piece items that were shipped weigh 88. I hope that's pounds. The consignee is listed as "collector of customs", which I will guess means a private individual (me) who will collect his or her merchandise and take it through customs. Only two packages went through K&N to IND, and both arrived at the "Destination IND" early on the morning of the 27th. The tracking information shows that they were "submitted to customs". Sounds to me like my prop and spinner crates are back in limbo. Perhaps the "submitted to customs" means that a formal entry was set up and that Customs is actually doing the full inspection. I don't know, but I hope to find out once I finally get notification that I can retrieve my goods. Hurry up and wait!

4/30/05 I was out of the office yesterday, and no word at home on my prop. The websites haven't changed, so I think the process is finished. What my prop status is baffles me a bit. First thing after the weekend, I'll call K&N and see what's happening.

5/4/05 I was off work and antsy today, so I ran over to Indy and got my prop. The whole process took about 1 hour (not counting the almost 200 mile round trip drive). Got the paperwork from K&N (5 minutes and no charge), went to CBP (Customs took about 15 minutes and didn't charge me a thing, OR insist upon extra "entry" paperwork). Then to Towne Air Freight to actually pick up the prop (charged me $20 handling fee, so I made them "handle it and put it in my truck... tok about 15 minutes), then back to K&N to give them a copy of the customs and release documents (less than 5 minutes).

I was nervous about this whole process, but it was a non issue. Went like clockwork and was a bargain at $20.

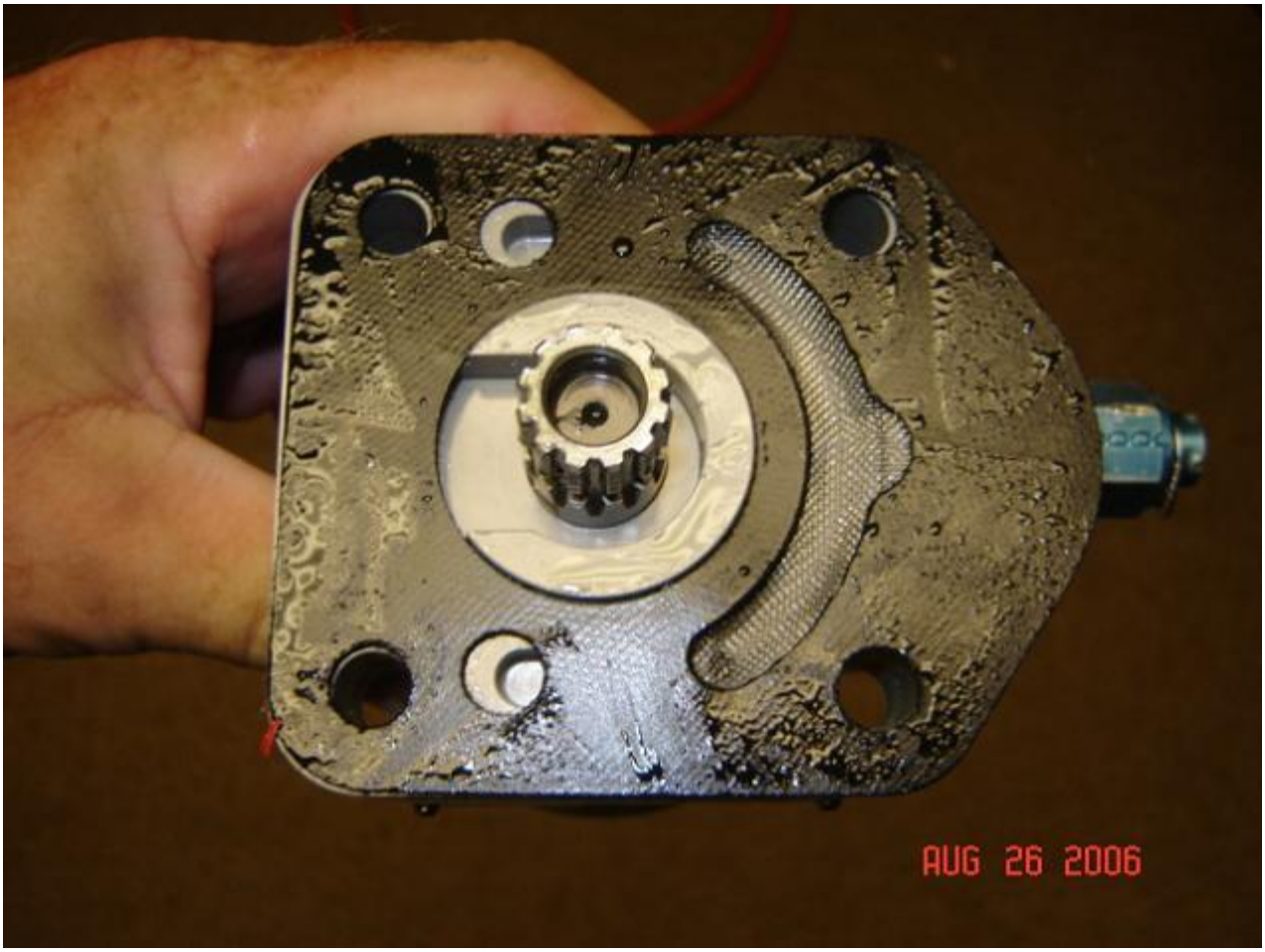
OoooOoh , that MT prop is purdy!

Prop Governor

I bought an MT prop governor at the same time that I bought my prop. I figured I'd get the package. Mt dropped the price of their governors so that they were competitive with the other "euro" governors available.

This governor is set up for an aerobatic counterweighted propeller. Evidently the mechanism works differently than a standard propeller and governor. More on that later.

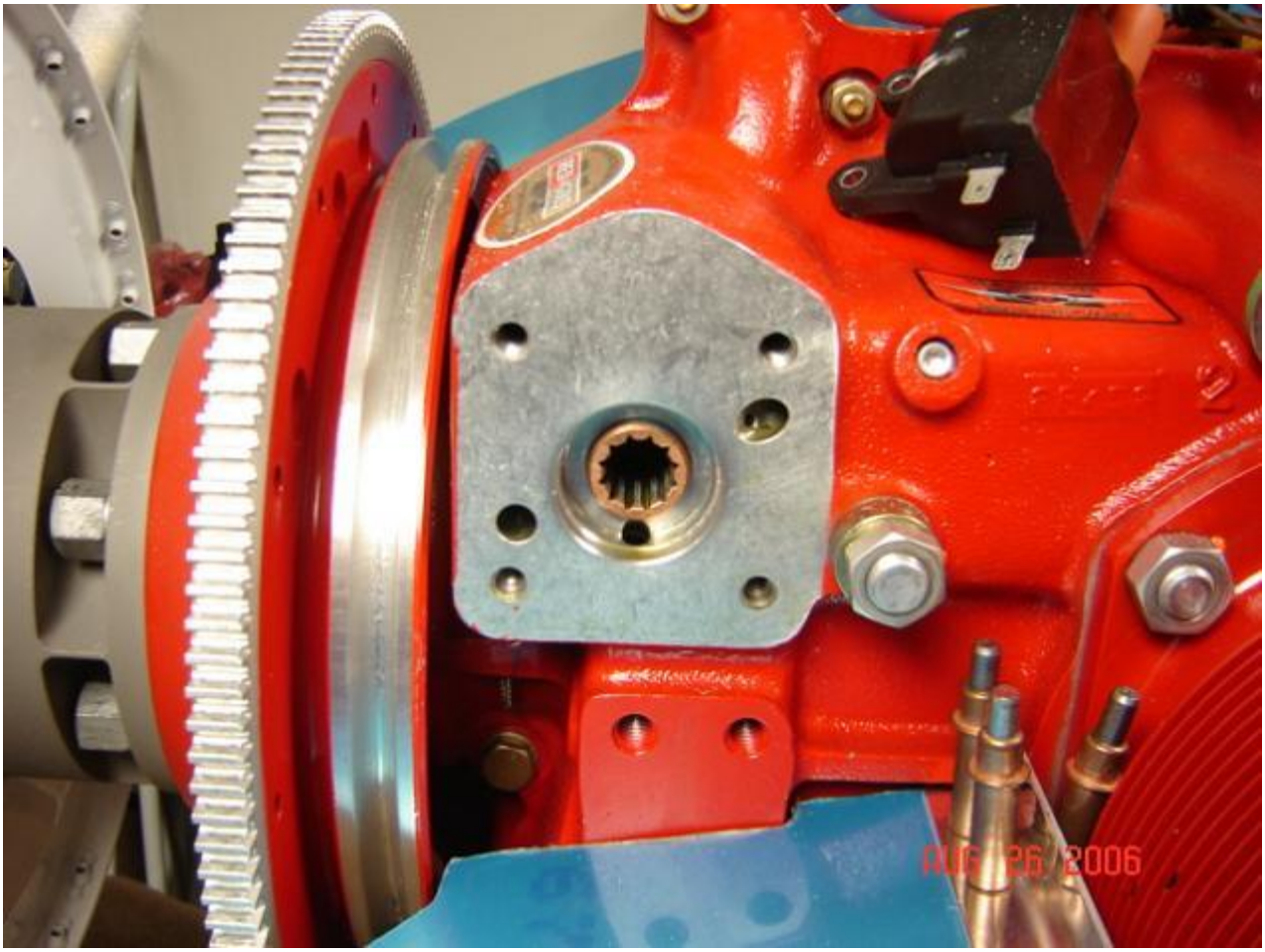
The gasket that comes with the governor is unusual. It has openings that correspond with the governor, as well as an arched filter screen that sits in a recess .



While I was working on the baffles around the engine (including the one that goes around the governor), I had my gnarly mean guard dog watch over the governor.

The governor, as it comes from the factory, is set up incorrectly. The arm comes out of the gov body at the 1 O'clock position, whereas we need to get it at the 7 o'clock position. I'm going to have to cut the safety wires and reposition the end cap and 6 screw 180 degrees from standard. That way, the cable can come from below the unit, and the lever in the quadrant will work as normally oriented along with the throttle.

When I tried to install the governor on my TMX-540, I noticed that there was a problem. No hardware. Hmmmmm... I think there are supposed to be 4 studs on the engine to mount this thing. Crap. Time to contact everyone and find out what to do about the studs. That will be a new procedure for me. Hope they don't require special tools to install.



Installation

The prop per se, is pretty easy to install. I used a Harbor Freight hoist and a pair of motorcycle straps to lift and hold the prop in position. It was simple to work each of the 6 bolts into place by hand. I installed the prop with the number 1 blade oriented with the "0" (Zero) mark on the flywheel and prop flange. The prop can only go on two ways due to the raised lip around 4 bolt holes. I made a mark on each piece to aid in realigment of the parts should I need to remove the prop in the future.

The bolts can only be turned a little bit at a time, maybe one rotation, upwards of two. So you have to work all the way around the prop a little at a time. The prop went all the way to seat just using my fingers on the bolts. It's a nice arrangement to have the bolts pinned into the hub, you can only get the prop so far off center that way. That is good because you are a lot less likely to tear up the O ring gasket that way. Oh, I lubed the O ring and mating parts before starting the installation.

Once the prop was all the way down, I torqued the prop down with a 3/4" crowfoot and wrench. Now all that's left to do is to safety the bolts with some '032 safety wire through the pins in the bolts. That should be fun.

The Kevlar spinner goes on last. Mine is just primered. It comes with all the screws and some filler plates that go aft of the blades and under the spinner (a little). Simply put the two middle screws in the filler plates and set them to place behind the blades. Then, put the spinner on and screw it down. Lastely, tighten up all the screws, doing the backplate first and working the way to the nose. BTW, the inside of the spinner is marked specifically for one of the notches to go around blade number 1. Hopefully that means they tested the prop/spinner combo at the factory for smoothness, track and balance. We'll see once I actually turn over the engine... which should be very soon (as of 9/07).

32 inch pounds on spinner screws and 63 - 66 foot pounds on the 1/2 inch UNF prop bolts for my application which is less than 300 hp. If that dickhead would have actually built my engine instead of ripping me off, I would have used 90 - 100 foot pounds on the bolts (anything greater than 301 hp).

Once installed the prop is allowed to have 1/8 inch of difference between the blades measured 4 inches from the tips. Seems like a lot to me. I'll check the tips AND 4 inches back to get reference points for both. It's much easier to check the tips.