Debunking the Myth of Combination Machines:
Review of Felder CF731

By Scott Bonder

When I started woodworking I was quickly given the impression that combination machines were a series of compromises that resulted in a machine that did a number of things poorly, rather than doing a good job at any one task. Most of the stories centered around Shopsmith-like devices that had one motor and a tilting table saw. I have no personal experience with the Shopsmith or its cousins, but I became a firm believer in one machine- one task. (I know of at least a few folks who love Shopsmith, I say again, I have no personal knowledge of how well the work- I just had the impression that they didn't fare that well) My belief, however, was challenged when my shop moved to a small one car garage and I was going to lack any room to move as a result of my various single function tools. This article is the result of my exploration of combination machines and, ultimately, a review of the machine I purchased.

I. The Combination Machine Myth.

The first time I considered a combination machine was when I thought about moving from building radio controlled airplanes to building furniture. Somehow, I doubted my ability to make a coffee table with an Exacto model knife, balsa wood and super glue. So, I started looking for tools that I could fit in my basement. My wife, the sensible one, said that I should start of slow in case I didn't like it. I, of course, disputed that and argued that better tools have a better resale value. She shrugged her shoulder, shook her head and let me go about my business.

I looked at contractor saws (bench top too) and combo machines like the Shopsmith. The idea of having a lathe, drill press and table saw all in one was very attractive. I went to a woodworking show and watched the demonstrations over and over. Then, being a good shopper, I looked at the contractor saw by various manufacturers. Clearly, a dedicated saw was more convenient, the blade tilted and it had more power. Based largely on that initial impression and comments by folks on various woodworking web sites, I decided that combination machines weren't for me. I'm too picky, I hate set up time, if I don't like the tool, I'll end up not wanting to woodwork, etc.

As time went on and I enjoyed using my table saw, my jointer, planer, router table, etc I became more firm in my belief that combo machines are inferior.

II. The Truth about Combo Machines

Combo machines, like other tools, are an exercise in getting what you pay for them. There are terrible machines out there, there are awesome machines and then there are the ones in between that you consider to fit your needs. I'll not give an

example of a terrible one as I am not all that familiar with them. I will say, however that I would not want or tolerate a machine that requires a lot of setup time or one that offers compromises in quality of individual components to get many features. This is similar to my watch buying philosophy. I never wanted one that had alarms, calculators and phone books. Too much stuff, none of it works very well. But, a solid divers watch is a wonderful tool that has more than one function and does all of its jobs well.

True, some compromises are inherent in combination machines. For example, they are one machine. So, as a general rule, you won't be splitting them up to spread out around your workshop. In all likelihood, there will be some change over time. There will also be some parts that serve more than one function, so you may need to find someplace else to rest your scrap pieces when not using the table saw. These types of compromises are, however, acceptable to me in small degrees.

Well-built combo machines are expensive. There is not a direct correlation to the price of the table saw, jointer, etc you might give up to get a combo, unless you are giving up top quality stuff (Martin, Felder, Knapp, etc). For example, my various machines, mostly Delta, sold for about 1/5 of the price of my combination machine. What I got, however, exceeded the individual power and capacity of each tool on a one to one basis. I gave up a 10" Delta Contractors saw with 1.5 hp and got a 12" 4 hp table saw. I got rid of my 6" jointer for a 12" jointer, a lunch-box type 12" planer for a 4 hp 12" planer and a router table with a 1.5 hp router for a 4 hp shaper that also has a high-speed spindle that uses router bits. All in all, a good trade. The combo machine is more mobile than my separates ever were, but it travels as a large unit, so it is harder to make room around it.

Combo machines are, for the most part, made outside of the United States. This means that shipping is costly and accessories are harder to get because you cannot get them at your local store. You also cannot use (on most) dado cutters. On the up side, the European-style riving knife is, in my opinion, far superior to the splitters we use in the USA. The guards that ride on those splitters are better. Most combo machines of higher quality have sliding tables (more on the Felder style later). The machines are actually set up for dust collection and it is not a mere afterthought. In short, the disadvantages are outweighed, in my opinion, by the safety and quality improvements.

Setup time for each machine does exist and probably exceeds that of separate machines. But, I can honestly say that change over, etc. might add about a minute to most operations. If I wasn't such a slob the process would go much faster. I have one fence that I use on the table saw and on the jointer. So, that requires moving. I have to flip up the jointer tables to get to the planer, but that doesn't even require that I move the fence, so it takes ten seconds. Going from planer to jointer is the longest setup time because the planer table must be moved to a low position so the dust hood can flip over into jointer mode. That is the longest operation and the one that takes a minute.

The shaper fence is like no router fence I've ever seen. It is a monster!!! It is heavy, secure, and easy to adjust. Lots of safety features built in, like safety bars to

keep the wood from sliding into the cutter and a hold down. The sliding table that comes with many of the combo machines is awesome. They make going back to a plain old table saw impossible.

Overall, "combination machine" is not a phrase that should raise the specter of poor quality, long set up times or lack of power. Instead, one should consider the particular machine and make an educated choice based on the facts. For those of you who may have met me or gotten to know me on the web, it should be clear that I cherish quality and lack patience for messing around with finicky tools. I feel confident that if I can adjust to a combo machine and enjoy it, just about anybody can too.

III. Felder Combination Machine CF731

You can see a picture of the machine and read the details at http://www.felderusa.com. In short, my machine is has 3, four horsepower motors running on three phase through an inverter (I supply 220 and the inverter takes it to 3 phase). I have a 12" table saw, shaper, 12" planer, and 12" jointer. All have electronic brakes so that they stop in just a few seconds after the stop button is pushed. First, I'll give you an overview of the machine, its fit-and-finish, and then I'll get to the individual components.

The machine comes in a gigantic wooden crate on a pallet stuffed with packing material, wrapped in plastic and coated in grease. I'm not sure how it is packed when sent from Austria to California because the California folks (FelderUSA) unpack it, make sure it is in good shape and check the settings. Once all is well, FelderUSA re-packs the machine for the last leg of its journey.

Delivery is a trip in all senses of the word. FelderUSA has to rely on trucking services to deliver this monster. The trucking services say they can handle stuff, when sometimes they can't do it. For example, I spoke to the trucking company and confirmed that the machine was coming to me with lift-gate service. That is, they were going to put it on my driveway. When the truck arrived the pallet was on sideways (I don't know how they managed that), the truck has a tiny lift-gate and the driver had not idea he was supposed to unload it for me. Luckily, my Felder rep was there to "install" the machine and he took care of getting it off the truck.

Getting it off the truck took a few hours, but went smoothly. Louie, the Felder rep, took the sliding table off the machine and we cut the pallet to pieces as we turned it in the truck. We then strapped it to truck and inched it over to the lift-gate. Once on the lift-gate, we strapped it to that and then lowered it down. Phew, Louie was sure sweating!

Once in my shop, Louie spent about 9 hours setting up the machine, the rolling carriage, the various fences and accessories and then making sure that everything was set perfectly. All settings were superior to anything I had on my Delta stuff, but that wasn't good enough for Louie. He literally spent 30 minutes getting rid of a shiny spot on the end of test piece as it came out of the planer. He called that snipe. Man, he hasn't seen snipe if that is what he called a mere shiny

spot. By the time he left there was no snipe by anybody's definition, the tables were all aligned, the cross-cut fence was at a perfect 90 degrees, etc.

The entire machine is painted evenly with a green color. No scratches, dents or dings. The tops all had machine marks, but nothing like my old stuff. Despite the marks, the tables were smooth to the touch and had no other imperfection. The three rings that fill in the hole where the shaper is fit perfectly and sit flat and flush to the table saw top without adjustment. There are, however, adjustment screws should it be necessary. The fences were all packed securely in pieces. They went together easily and are incredibly adjustable. They are all pretty heavy too!

The interior of the machine is wonderful. Everything is rock solid, no skimping, and no cheap screws, just good solid workmanship. There are plastic suction points that cover the shaper and the saw blade to aid in dust collection, access panels all around and micro switches. If any door is open the machine will not start. Also, the various functions have start and stop switches all around the machine, but the red button on any will cut power to all. Great safety feature!

A. Table Saw

The table saw has a 12" sliding table with the capacity to rip a 6' long piece on the sliding table. The table is at near zero clearance to the blade so that the table edge is a great reference when ripping. You can sit on the slider when it is fully extended and there is no flex in the table. Even with me on the table, my wife could push it from end to end with little effort (the saw was off).

You can use the slider in a number of ways. First, you can ignore it and rip using the rip fence like on an American saw. Or, you can use the rip fence and slider together to make a sort of meat slicer. That is, if ripping a bunch of ¼" strips from a 15" wide piece you simply set the fence so the cutoff on the rip fence side is ¼" (and pull the fence back so it ends right before the blade). Push the wood up against the fence and once aligned use the sliding table to move the wood through the blade. I find it helpful to clamp the wood down to keep me from letting it move and the Felder clamp is massive and does the job well. Just like making a sandwich at a deli counter. No danger of kickback because the waste is not stuck between a fence and the blade, plus the ever present riving knife (splitter) is there to keep the wood away from the rear teeth.

The sliding table is great for crosscutting and the crosscut fence is massive. It has a very cool stop system. The wood rides against the stop block and a "splinter block," not the fence itself. The stop block has a spring-loaded wedge in it. So, you can set the stop block and put wood against it so that the wedge is pushed in to make your first cleanup crosscut and then move the wood so the wedge pops out and that is your guide for your final crosscut. I am not describing that well, but it is very useful.

The slider has a few slots running down its length. You can fit a clamp in there to hold things steady and you can attach a number of accessories, like a fence

to help with rough ripping long stock (no more putting a piece of plywood or other straight edge against the fence for this chore).

Note, you cannot use dado cutters with this saw. Not a big deal to me and I now use the shaper to deal with this operation.

The blade has a brake and stops in about three seconds, as do all cutters on this machine. Nice smooth stops.

The real bonus of getting a Euro-style saw is the riving knife and basket guard. No more splitter woes. The knife follows the blade up and down and on angles. The guard sits on the knife, if not in the way and has great dust collection. If you do need to remove it just pop it off in under 5 seconds. A great safety device!!!!! This should be standard on all American made saws too.

B. Shaper

The shaper is on the far end of the table saw and sits under rings that are machined to sit in the top perfectly. When you want to use the simply take out the appropriate number of rings and raise the cutter. Around the rings in the top are some machined holes. These holes are for the fence to lock down. Two are threaded for the hold downs. Another two are reference holes so that the fence always goes back on the table in the same position and is micro-adjustable from that position. As I mentioned earlier, the fence is massive. I store it on a shelf so I don't have to lift it every time I want to use it. The fence I use has a hold down shoe and a spring to hold stock against the fence. The fence is split and adjustable so that you can size the opening to the cutter.

Also, I have the safety bars, which are metal bars that fit into the fence and sit across the opening. To use these, you put them into the fence at the appropriate height and lock them down, that simple. For example, if cutting a profile that will remove stock from only half the height of piece to be shaped, you set the safety bar(s) at the height that stock will not be removed from the piece. This then serves as a guide so that the wood doesn't wander into the cutter head before reaching the other side of the opening and contacting that half of the fence. Clear as mud? Suffice it to say that it serves the same safety purpose as a zero clearance insert on a split router fence.

The shaper is 4hp, and I have the 30mm spindle. You can get a bushing so you can use standard sized cutters, but I've been happy with the cutters from Felder thus far. Every turn of the height handle raises the cutter 2mm. You can tilt the spindle by using another handle. The spindle tilts toward the rear, which is pretty cool and seems, to me, safer than tilting toward the user.

Spindle changes (I also have the high speed router spindle) are a snap. I think I have it down to under two minutes. Simply loosen the belt by means of a handle, loosen to lock-downs and pull it out. Replace it with the other spindle and appropriate belt and now the shaper takes router bits. So far, I use router bits for making dado cuts.

C. Jointer/Planer

The jointer and planer share a cutterhead and dust hood. Both are 12", very thick and heavy tables and no detectable vibration. The jointer tables are 64" long and adjust easily. The outfeed uses a knob under the table. The infeed has a lever and moves easily and doesn't stray once set. The fence is a bit odd and takes getting used to for those coming from American machines. It is the table saw fence, so it ends just about 6" after the cutterhead. It struck me as odd for a while, but I am now used to it and it is perfectly functional. For some reason that is not clear to me, the technique that seems to work best on this jointer to lightly feed the wood over the cutter from the infeed side with no worry about moving over to the outfeed table until the end. So, the fence ending before the cutter makes no practical difference. I have the jointer set for a very slight spring joint in a 5' length. The fence also bevels easily.

The guard is a Euro-type. It is not spring loaded. Instead, it forms a bridge over the cutter that is set to allow the wood to travel under it. Overall, I feel safer using the jointer with this setup. Again, it took some getting used to though.

Lifting the jointer tables accesses the planer. The tables unlatch easily, lift toward the center of the machine and out of your way. Once lifted, they lock into place and you just flip the dust hood. You now have a 12" planer. The planer has two speed settings for the rollers to pull the wood through to allow for different types of wood. There is a digital readout on the planer as well. The table moves in 2mm increments per turn of the handle. So, moving the table all the way up is a forearm workout, but not too bad really. As I said earlier, the planer produces smooth cuts and has plenty of power.

D. Misc.

Felder has a bunch of accessories for their machines. The coolest ones, in my opinion, are the extension tables. You simply clip on these aluminum or iron tables wherever you need them and they are flat, and set perfectly to the surface top you are attaching them to. Awesome flexibility with these.

There are multiple shaper fences. For example, there is one designed to allow you to do curved work. It is rounded, features a guard and a pivot pin on the inside. Everything is adjustable, of course. The mortise and tenon setup is pretty cool. A table with guards attaches to the sliding table. A fence attaches to the shaper. With tenon cutters in place the wood is held down on the sliding table and the table is pushed so that the wood moves past the horizontal cutters. Easy to use, safe and very clean cuts.

IV. Conclusion

I am happy every time I get to use my Felder combo. I am safer, enjoy the woodworking more and, oddly given this is a combo machine, do not have to screw

around with tool setups like I did on my other machines. Sure, I setup as I move from use to use of the machine, but everything is set and stays there. No more knuckle banging trunion alignments, etc. I highly recommend that you consider a combo machine if you have a space requirement. I also highly recommend that you consider a Felder if you want true quality.