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MiniTech Engineering & Model Supplies

Newsletter

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IN THIS ISSUE

When I see a government Dept head banning Christmas decorations due to their potential to offend non Christians I have to ask, "Am I the only person who sees this as insane???" Australians are tolerant and accepting and if we want all people living in Australia to adopt our culture, then all new residents need to BECOME tolerant and accepting also.

Some media sources like to accuse Australians as being bigots or prejudiced, but history doesn't support it. During the Second World War Black American soldiers who were stationed in Australia, reported an acceptance by Australians they did not experience anywhere else. I have never spoken to a solitary soul who reported being offended by the openly religious garb or behaviour of another person, Christian or otherwise.

If others are atheists or not, or want to celebrate Hanukkah, Ramadan, Wesak or Christmas, then so long as they are not demanding others to behave likewise, then let all people do what is right for them. Let's not be so precious that we stop being and doing what we are really good at being…Easy going, fun-loving, tolerant, accommodating and uniquely Aussies.

TRAMMING

Tramming is the process of squaring a mill head with the table. Some machinists perform this task very regularly if they are involved with precision work but after every job if the job requires the head to be tilted at any stage during the previous operation. If a machine is out of tram it will not make a flat cut and it will either be concave if the cut is in the same axis as the tilt of the head, or deeper or one side or the other of the cut if the cut is at 90 degrees to the direction of tilt the head is experiencing.

For Mills without a tilting option on the head, the process involves shimming the bolts that fix the head to the work table's base. This process is too long to reprint here, but this is a link that is very comprehensive, easy to follow and even discusses how to make your own shims... http://rick.sparber.org/TM.pdf

For Mills that have a tilt head, this article from Modern Machine Shop simplifies the process.... **The tilt function adds flexibility and allows these machines to cut work pieces at various angles when needed. Unfortunately, even though the milling head can be tightened down, it can work its way out of the original position, thus becoming "out of tram." A milling head is put "into tram" by attaching a test indicator to the spindle (on an arm to rotate in as wide an arc as possible) and rotating it while tapping the head into position until the dial reads zero all the way around. During this process, machining setups may need to be disturbed or completely torn down.**

Joe was a single guy living at home with his father and working in the family business. When he found out he was going to inherit a fortune when his sick father died, he decided he needed a wife with whom to share his fortune. One evening at an investment seminar he spotted the most beautiful woman he had ever seen. Her beauty took his breath away. "I may look like just an ordinary man," he said to her, "but in just a few years, my father will pass, and I'll inherit his large fortune."
Impressed, the woman took his business card and three months later, she became Joe's stepmother. Women are so much better at estate planning than men!!

There once was an old man who was about to die. He told his wife to put a bag of money in the attic "When I die I'll get it on my way up." chuckled the old man. Well when the old man died the wife went up to the attic and found that the bag of money was still there. "I knew I should have put that money in the cellar!" said the old woman.

About Fly cutters

From the images above, you will see that a fly cutter can have a parallel shank to insert in a collet, or a taper shank to insert in a spindle. They can have a tungsten carbide insert cutter, a brazed tungsten carbide cutter or a ground high speed steel cutter. Regardless of the nature of the cutter, they all have in common the concept of having only one cutter that is designed to be in contact with the work over a wide diameter.

A fly cutter will often produce the best surface finish because they allow you to finish a very wide area in one pass with no overlap marks and the cut has a constant depth. If you have a face mill that has individually ***adjustable*** insert heights, you probably won't see a lot of benefit in a fly cutter, but if not, you can easily convert a face mill to a fly cutter by removing all but one insert, and it is interesting to experiment with the results. Reducing the number of inserts will necessitate a reduction in feedrate, but it may be worth it in terms of improved surface finish.

Some people swear that the best finish for aluminum is a fly cutter that is large enough to cut your material in a single pass.

Like most mill cutters, your fly cutter will perform better with positive rake on the cutting tool. Fly cutters are very sensitive to tram (Tram is the squareness of the head to the cutting table). The cutter is apt to cut a concave instead of flat cut if your mill's head is not trammed properly.

(How to tram is also discussed in this newsletter)

Watch your workpiece carefully as the leading edge moves through the center of the fly cutter. All the cutting should have been done as it was travelling the first half of the way if you head is in tram (think about it carefully, that's one geometry for one direction, so you actually have to see this behavior cutting in both directions to be sure). If it cuts more on the second half, you can be sure the tram is such that the head has that half tilted downward slightly. Also, the larger the fly cutter diameter, the more the tram effect is exaggerated.

What way you decide to grind the tool steel in your fly cutter can generate a lot of debate. A preground set of small fly cutters with round tool bits are available to eliminate this issue (Part Number FC-375 is a set of 3 fly cutters with a 3/8" parallel shank $49.50 shown below)

Below is an example of how a larger fly cutter with square tool steel could be ground for cutting steel…

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BOOK REVIEW

DAVE GINGERY'S GREEN SAND CASTING TECHNIQUES

This time we will not review a book but a DVD. The following is a copy of the description on the jacket cover. Price is $30.95 incl GST…

"In this film, you have the opportunity to look in as Dave and Vince Gingery discuss the many benefits of adding a foundry to the home workshop, and how the home foundry was used to form the basis for building the complete machine shop series.

From there you will head outside for a close-up view of the charcoal furnace as we assemble the necessary items, light the fire and actually go through the complete process of melting and pouring aluminium.

Next you will join Dave in his home shop foundry where he will teach you what is required to build a green sand mold as he provides the detailed step-by-step instruction on how to do it. You will see Dave's gas fired crucible furnace in action as he melts the aluminium required to build a model engine flywheel casting.

Finally, you are shown many of the models and machines Dave has made using scrap metal. As an added bonus, see close up video of the Atkinson Cycle and Atkinson Differential engines running in addition to the Horiz/vert metal cutting bandsaw.

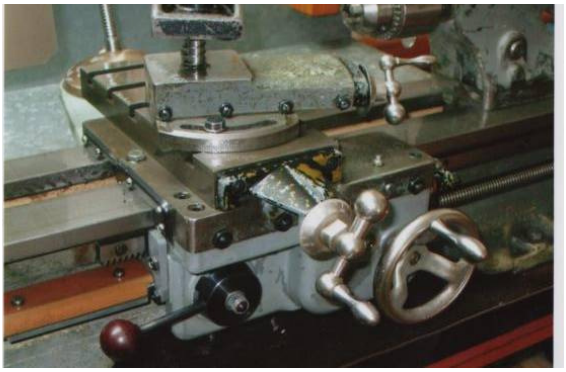
As you take this opportunity to learn from Dave, the 'do-it-yourself' master himself, you will soon appreciate how simple, fun, and practical adding a home foundry to workshop can be."

Run time 1 hour 35 minutes

FOR SALE

MYFORD ML7

One Owner since purchased new in 1957. Serial No K36953. Only used for small hobby work only. Features - clutch, 3 and 4 jaws spin on 4" Burnerd chucks, genuine Myford Fixed and Travelling Steadies; ½" Jacobs drill chuck, numerous items of tooling, $2200. Brisbane 07 32617043 Owen



A woman burst out of the examining room screaming after her young physician tells her she is pregnant. The director of the clinic stopped her and asked what the problem was. After she tells him what happened, the doctors had her sit down and relax in another room and he marched down the hallway where the woman's physician was and demanded, "What is wrong with you? Mrs. Miller is 60 years old, has six grown children and nine grandchildren, and you told her she was pregnant?" The young physician continued to write his notes and without looking up at his superior, asked, "Does she still have the hiccups?"

Merry Christmas and a Happy and Prosperous 2011to all our wonderful friends

From Gordon and Bob

Mrs. Swanson declined to serve on the jury because she was not a believer in capital punishment and didn't want her beliefs to get in the way of the trial. "But, Madam," said the public defender, who had taken a liking to her kind face and calm demeanor, "this is not a murder trial. It is merely a civil lawsuit being brought by a wife against her husband. He gambled away the fifteen thousand dollars he'd promised to spend on a chinchilla coat for her birthday." "Hmmm," reflected Mrs. Swanson. "Okay, I'll serve, I could be wrong about capital punishment."

CNC Class of 2011

If you are interested in learning the fundamentals of Computer Numerically Controlled (CNC) milling then read on…

Minitech is investigating holding a class for any person wishing to become familiar with CAD/CAM software and how it works with a CNC Milling Machine. You will learn the basics of how to design a project in CAD software and how that is converted into computer language that the computer can read and interpret for the milling machine to cut.

The class would be held at Minitech premises here in Brendale over 3 separate evenings from 7:30 to 9:30 and would be limited to 5 persons. The cost would be $110 per person. If you are interested please call or email bob@minitech.com.au

Silver Steel properties

Silver steel is common tool steel that is supplied as a centerless ground round bar. Amongst other applications, it has been widely used to make such things as punches, engravers, screwdrivers. Sheffield silver steel is used in France as a blade steel for straight razors. In Finland, German silver steel was widely used for Puukko knives. The composition is defined by UK specification BS-1407: carbon 0.95–1.25, manganese 0.25–0.45, chromium 0.35–0.45, silicon 0.40 max. In the annealed state is has a hardness of 27 HRC. It can be hardened to 66 HRC. *(Minitech have a comprehensive supply in Metric and Imperial supplies available)*

Fine Standard Tolerances
1" and above +/- 0.0005"
Below 1" +/- 0.0003"
Over 25mm + 0.00mm - 0.02mm
25mm and below + 0.00mm - 0.01mm

Closely Controlled Analysis - min. max
Uniform machining properties and consistent response to heat treatment.

Exceptional Surface Finish
Eliminates grinding or polishing. The exceptionally high surface finish can be utilised without the need for further expensive grinding or polishing.

Controlled Annealing
Maximum degree of spheroidisation. Easier, more uniform machining is possible giving greatly improved machined surface.

Hardening
For maximum hardness, (66 Rockwell 'C' or 850 DPN), heat to 770^{0}C - 790^{0}C (1420^{0}F - 1450^{0}F). Soak till uniform then quench in clean water or preferably 10% brine solution. Oil quenching is used if the item is a complex shape. The use of a pyrometer is suggested. If a muffle furnace is used the atmosphere should be slightly reducing to minimise scaling and to avoid soft spots.

Tempering (reduces brittleness after hardening)
Minimum 1 hour soak, immediately after hardening.

Annealing (reduces hardness)
Heat slowly to 760^{0}C - 780^{0}C (1400^{0}F-1436^{0}F). Soak for 1 hour per inch of section and cool slowly in the furnace.

The book "Hardening Tempering and Heat Treatment" (WPS-1) is available for $19.80