

Woodworkers Club OF HOUSTON

VOL. 7, NO. 4

APRIL, 1991

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MARCH MEETING

Our program for the March meeting was presented by Gayle Robinson on Measuring and Measuring Instruments.

If you are going to turn out work of professional quality, careful marking and measuring is important. High accuracy is not needed in ALL phases of woodworking, but increased accuracy can often be attained with little or no effort with a few simple tools and correct procedures. Some of the subjects Gayle covered were:

1. How to avoid measuring.
2. Measuring systems in common use.
3. Devices for measurements.
4. Accuracy and Tolerances.

How to avoid making measurements? One method is Direct transfer (Super-imposition) Hold the workpiece against the space to be fitted or lay the piece to be duplicated directly on the workpiece and then either mark, drill, or saw. Jigs and fixtures are especially useful where you have many pieces to be alike. Just be sure that they are made accurately! Use two pieces of scrap wood, clamped together. Extend to the desired points and mark on the workpiece. You can also use an un-marked strip of material, then as you determine the various lengths and widths mark them on the strip along with notes as to which dimension the mark represents.....Making your own scale as it were. Story poles, sticks and blocks are especially useful when marking the height of a chair-rail. This method can be used in many cases in woodworking.....Cut a piece of scrap material to the desired dimension and use it to layout this dimension where ever needed. Just be sure to use the SAME surface for reference for all locations.

PROBLEMS WITH MEASURING:

Avoid making to many transfers of a dimension---From the tape to a note book, from the notebook to a calculation, from the calculation to a scale and finally to the

workpiece to be cut. Six chances for error.

Scales can be mis-interpreted. How many times have we cut a piece of wood and found that it should have been something, something 7/8" and we marked 3/8" ?

CALIBRATED MEASURING

It is when we want to communicate our dimensions to others that we need a system of measurements.

Two systems of measurements exist in the US, side-by-side. They have roughly equal but separate legal sanction--The CUSTOMARY SYSTEM and the INTERNATIONAL (METRIC) SYSTEM.

The Customary system, based on the British Imperial System, has been used as the primary system in the U. S. for many years. HOWEVER...The Metric system is the only system that has received specific legislative sanction by Congress. THE LAW OF 1866.

The customary system, based on the rather indefinite values of the length of a King's arm for the Yard, the length of his FOOT, and the width of his thumb for the inch.

The METRIC system consists of seven units: Length, Mass, Time, Electrical current, Temperature, Luminous intensity, and Amount of substance. All other units are derived from these using multiples of TEN. The metre is equal to One ten-millionth of the distance from the North Pole to the equator (by definition). Incidentally, a pendulum one metre long, at the equator, has a period of one second.

Fully 90% of the world's people use the Metric system today. The Metric system has been slowly, steadily increasing in use in the United States over the last 100 years. The US is the largest, industrialized nation in the world not 100% using the Metric system !

ACCURACY

It is very difficult to discuss accuracy without also discussing TOLERANCE. HOW ACCURATE DEPENDS ON HOW MUCH WE CAN ALLOW.

Several rules will come to mind about accuracy

1. Measure twice----Cut once.
2. Don't trust scales on machines, yard sticks, tapes and squares. Check them! Especially on critical work. If blades are changed on the machine re-check!
3. When measuring or "laying out" place the calibration marks close to the work.
4. Use a sharp pencil, scribe or a knife.
5. Avoid tilting the marking device....or at least maintain the same angle, when marking a line along a scale, place the marker's edge close to the scale.
6. Use a "pocket" calculator for difficult calculations. A table of decimal equivalents attached to the calculator helps. Pocket, solar powered, four function calculators can be had for \$4.00 or \$5.00. For about \$40.00 you can order a calculator which will handle fractions.
7. When marking and sawing, it might be helpful to decide whether to "Keep the mark" or "throw it away" with the scrap.
8. In measuring C-to-C distances between holes of the same size, remember that Edge-to-Edge" distances are the same--providing reference is taken from the same edges.
9. "Step-and-Mark" methods of laying out work is the least accurate. There is always a build-up of errors. Each "step" and "mark" has a potential for an error....Sometimes plus and sometimes negative.

10. Allow for saw kerfs. Maybe, even use double lines.

11. Be able to read the scale to, at least double the desired accuracy. (Or tolerance allowed). Be able to read 1/32 when 1/16 accuracy is desired.

12. In determining the proper tolerance, be sure to make ample allowances for shrinkage and/or expansion of the wood parts. Give attention to the relative rigidity of the various components of the assembly.

To remain as accurate as possible always use the same tape measure or scale (ruler) through the entire project. Measuring devices vary from one to the other.

Always have good lighting in your shop--you can't be accurate if you can't see the mark.

Thanks Gayle for a very informative and interesting program.

WORKSHOPS AND CLINICS

BANDSAW BOX clinic will be given by Bill Beggs at his shop in April and May.

Wooden Hand Screw Clamp clinic will be given by Murray Gordon on April 20.

For Further information and what you need to bring contact Stuart Murphy.

PLEASE IF YOU ARE REGISTERED FOR A CLINIC

AND CANNOT ATTEND PLEASE CONTACT THE PERSON GIVING THE CLINIC SO HE CAN CONTACT THE NEXT PERSON ON THE LIST. It just takes a couple of minutes on the phone.

Stuart still needs members to host clinics--if you like to help out please contact him. Maybe two members can get together to host a clinic.

PROBLEMS AND SOLUTIONS

The question was raised if you could put Lacquer on top of Latex. The answer was NO.

But maybe if you used one of the new Water-based Lacquers --it might work.

BUY AND SELL

A Buy and Sell Bulletin Board will be set up at each meeting so that the members can post what they have for sale. This will make it easier to get the correct sellers name and phone number.

We will still list any members items for sale in the Newsletter as long as you get them to Sharon no later that 3 weeks before the next meeting.

FOR SALE---Dado Set 8" stack set, craftsman #3253, very limited use, \$25.00 contact Bob Gallant 376-0276.

FOR SALE--

1. Craftsman Miter Box Saw---\$35.00
 2. Black & Decker 1HP 7 1/4" circular saw with 3 extra blades-----\$25.00
 3. Craftsman 18 inch Scroll Saw---\$100.00
 4. Craftsman Router Crafter---\$25.00
 5. Craftsman Router Bowl Crafter---\$25.00
 6. Two 3" Forstner Bits----\$35.00 each
 7. Tri-Hone Sharpening stone---\$10.00
- Contact Fred Olsen 682-4115 4721 West 43rd.

SHOW AND TELL

Last month Ken Wallis showed us a Kitchen table with a sliding extension top. This month he brought a sample of how he made the extensions on the table saw and bowling alley maple. You can buy these commercially for \$45 to \$60.00 or you can save lots of money and make them yourself as did Ken.

Ken also brought one of the Kitchen chairs that he made to go with the Kitchen table. He found some Birds Eye Maple from his Bowling alley maple. He used some of the design tips from Dr. Forkner's previous program for the front legs. WHAT'S next Ken the Kitchen sink?

Bob Gallant made book ends from Walnut and something white--Saw handle on one side and the saw on the otherside.

Tom Gathright made a game of chance, with numbers and dice.

DUST COLLECTION SYSTEMS--CON'T

We started this column in September 1990 and followed up in October 1990, with all intentions of following up each month till it was finished. But each month something came up to fill the space in the newsletter and there just was no space left.

In the first two columns we discussed the advantages and disadvantages of using PVC and sheet metal piping.

A short review in what we already discussed about piping: PVC comes a variety of sizes and schedules (wall thickness) You must use the same sch. in pipe and fittings or they will not fit. PVC is available at Home Improvement Centers and Plumbing supply houses. PVC is easy to work with ---but it must be grounded because static electricity builds up in plastic pipe and a spark can start a fire or cause an explosion.

Sheet metal piping is easy to work with, lightweight, thin walled but strong, and you don't have the problems with static buildup. It is available in limited quantities at your Home Improvement Centers but I would recommend going to a sheet metal fabricator.

Of course if you want the best and cost is no object the commercial systems use Spiral Pipe available is 3" Diameter to 42" Diameter in 5-0 foot to 10-0 foot lengths. Spiral pipe is made from 20 gauge galvanized steel, it is machine-formed with a lock tight seam that has strength equal to longitudinal seam duct two gauges heavier. The pipe's smooth, obstruction-free interior walls, combined with tightly machined fittings and components, assure superior air flow and minimize leakage.

What are the advantages of installing a central system to independent dust collectors on each machine? The first advantage is maintenance. With a central system you have only to clean one unit. The individual units also take up valuable floor space and a central unit doesn't.

When designing your system figure in the least resistance. Less resistance ensures the proper flow of air and material through the ductwork, which means the fan uses less energy and cuts your costs. Keeping the resistance low is why all branch entries should be at a 45 degree angle, not a 90 degrees as you often see them.

What about flexible hose? Flexible hose is an ongoing problem with many installations. Flex-hose should only be used when absolutely necessary. It adds a lot of resistance to the system and the hose isn't as flexible as people think it should be.

DESIGNING YOUR DUST SYSTEM

Before you start designing your dust system you need a floor plan of your shop area including the following:

1. Locations of Dust Producing Machines; make note of where dust pick-up is on each machine.

2. Desired location of dust collector unit.
3. Floor to Joist measurement.
4. Any obstruction that would interfere with the run of the duct.

It is best to do the following calculations before you purchase your dust collector of the necessary ductwork.

- 1.) Duct Velocity (FPM)
- 2.) Proper size of Duct
- 3.) Total CFM required--Air volume in cubic feet per minute.
- 4.) System Resistance (SP)

Duct velocity for woodworking dust should be 4000 FPM --velocity in branches and 3500 FPM--velocity in Main.

There are several ways to determine the diameter of the branches--1. If the machine has a dust outlet with factory installed collar--this is the size of the duct for that machine. 2. Follow the following chart.

CFM REQUIREMENTS FOR WOODWORKING MACHINES

(Based on Velocities of 4000 FPM in branches and 3500 FPM in Mains)

MACHINE TYPE	DUCT SIZE	CFM
Radial Saw	5"	550
Table Saw(to 16")	4"	350
Disc Sander(to 12")	4"	350
Belt Sanders(to 6")	1"-5"	550
Planers(to 20")	1"-6"	785
Jointer(to 6"0)	1"-4"	350
Band Saws	1"-4"	350
Most 12" to 18" band saw bases are sufficiently enclosed to permit use of 1"-4" takeoff at rear of base.		
Floor Sweeps	6"	785
(If only used at clean up time do not include in System CFM requirement)		

When planning your duct work use as few elbows, fittings as possible use 45 degrees fittings instead of 90 degrees--do not use Tees use Wyes. You want as smooth and wide a transition as possible--its easier to make a wide smooth turn than a sharp 90 degree turn. When you figure how much resistance your system will have, you must convert those 45 and 90 to the equivalent feet of pipe. If you are using 3"Dia. pipe, a 90 degree elbow is the same equivalent of 5 feet of pipe, while a 45 degree elbow is the equivalent of 2.5 feet of pipe. With the 45 degree you get half the resistance of a 90 degree elbow.

PIPE DIAMETER	90 DEGREE ELBOW	45 DEGREE ELBOW
3"	5 FEET	2.5 FEET
4"	6 FEET	3.0 FEET
5"	9 FEET	4.5 FEET
6"	12 FEET	6.0 FEET

(CONTINUED NEXT MONTH)

MEMBERSHIP BOOK AND ROSTER

Last month all members received a membership book and roster. In past years we have printed at least four rosters a year.

This will be the only roster you will receive, we spaced the members names so that they would be easier to read and also allow space for changes and any new members that join throughout the year. Each month we will list in the newsletter any changes or additions, each member will have to add them to there own roster.

If you joined after the membership book was mailed we will issue you a book as you join.

I apologize that the membership books were not at the March meeting but I just forgot to bring them--if you didn't get one see Leo at the next meeting.

The following are additions or corrections to the roster:

Change the street number for Bill Beggs to 7341 Antoine and remove his work number.

Change Gary Wallace's work number to 584-1119.

Correct Robert Schiltt address to 2511 Bandeller and phone number to 462-5265.

The following names need to be added to your roster list:

PASADENA INDUSTRIAL WOODWORKING TOOL SHOW

Pasadena Industrial will hold its Spring Woodworking Tool Show on Friday April 19, Saturday April 20 and Sunday April 21.

If your unfamiliar with this show they put a large tent and have representatives from the different tool manufacturers to demonstrate there various tools. Upon entering the show if you just say Johnny sent me you can get in free, your admission allows you a closer view of the different tools and most manufacturers invite you to try out a tool before purchasing it. Johnny also has show specials and free hot dogs, sodas and beer.

Johnny Bowling has offered us a booth to promote the club, we will need volunteers to man the booth--please sign up at the next meeting.

We would like to display members projects at the booth but because this is a tent show we cannot be responsible for any items left at the show, so we ask that you bring them when you come to work the booth and also take them home with you when you leave if this is a very valuable or priceless item.

The Show hours are on Friday from 12:00 (Noon) to 5:30 P.M. -- Saturday from 8:00 A.M. to 5:30 P.M. and Sunday from 12:00 (Noon) to 5:30 P.M..

The show will be held at Pasadena Industrial Supply at 222 West Pasadena Freeway, Pasadena, Texas.

How to get there: Pasadena Industrial is located off of Highway 225. From South Loop 610 take Highway 225 to Pasadena--take the Tarter/Main St. Exit--Follow the service road till you see parking under the elevated freeway on the left---High School is on the right side.--Park under the elevated Freeway--cross the street on foot and you are there.

APRIL MEETING

WHEN: APRIL 13TH, 1991 9:00 A. M.

WHERE: BAYLAND COMMUNITY CENTER
ON BISSONNET AT HILLCROFT

PROGRAM: The program will be presented by Ken Whitaker on the Inkra Jig. How to make Dovetails, Sliding Dovetails, box joints. Also items that are commercially made for the Inkra Jig and items that you can make in your own shop. This will be an actual demonstration --we will be making chips--we are also going to try something different so that everyone can see. There will be a monitor set up and a videocamera will be used to feed the signal to the monitor.

For May the program scheduled is Shop Layout by Leonard Elholm.

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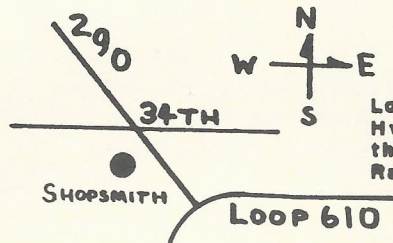
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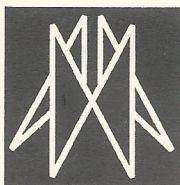


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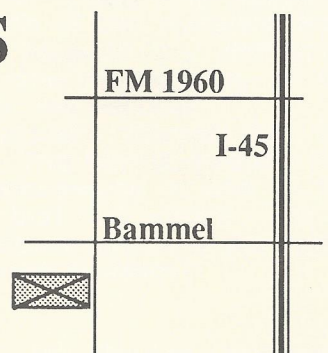
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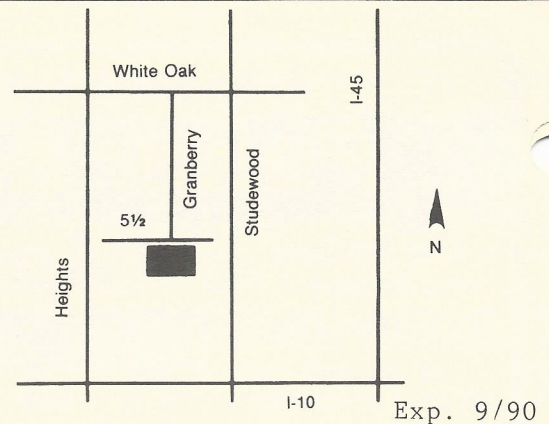


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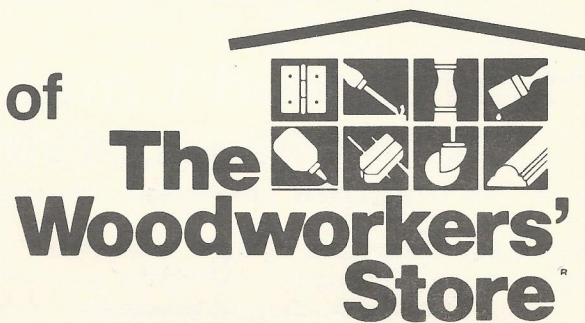
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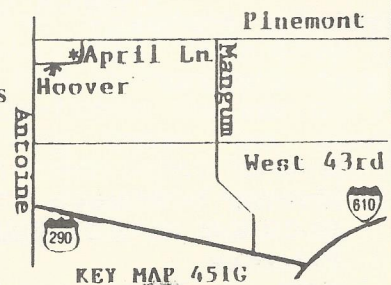
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