

WOOD CHIPS



Northwest Indiana Woodworkers Association

Volume 14, Issue 8 August 2010

President's corner – August 2010

Lou Takacs

The Lake County Fair has come and gone. I want to thank all of you who were able to give some of your time to represent the club at our booth. Over the 4 days we met a lot of people and passed out a lot of club business cards and pamphlets. We even had a few people take a membership application with them. I know we helped to draw interest to woodworking as a hobby and something that needs to be passed on to future generations.

I want to recognize our Secretary, John Hunter, for being at the fair each afternoon from 3:30 pm until close, along with his huge assistance in getting the booth organized and people lined-up for the booth. I also want to thank those members who contributed items for our display. We had many, many good comments on our display of woodworking items. A few people asked if any of the items were for sale, but we had to tell them that they would have to contact the person who made the item.

Mark your calendar for the club PICNIC. The club picnic will be held Sunday, August 29 at the shelter near the meeting room. We also need to know who is planning to come to the picnic so the club can purchase enough meat, buns and soft drinks. Please let Claudia know if you are planning on coming. We will have a sign-up sheet going around during the meeting. And don't forget the BINGO games with the gag gift prizes. Just wrap up in newspaper an item or two to be used as a prize. Opening the prizes is always a lot of fun.

LAKE COUNTY FAIR

We would like to thank all those members that helped out at our club booth at this year's Lake County Fair. Lou Takacs, Ronnie Rogers, Dick Sader, John Sturk, Charlie Morris, Ron Benson, Norm Johnson, John Novak, John Hunter, Max Hernick, Chuck Norman, Denny McCooole, Paul Jarrell, Fred Baginski, Art Willing, Helen Willing, Phil Malavolta, Claudia Brazil, Nancy Distel and Wally Richardson.

More on the Lake County Fair

By Lou Takacs

The crew at this year's Lake County Fair did a great job of informing people about our club and woodworking in general. Many people were asked if they were woodworkers or would they like to become one. Everyone was encouraged no matter their skill level and the club explained how we offer sharing of knowledge and an avenue to learn about different aspects of woodworking.

The "MAGIC BELT HOLDERS" were again a BIG hit with kids of all ages and those just young at heart. I don't know who had more fun, the kids seeing the "Magic" or our clubs "Magicians" !!
The following photos are from this year's activities:





SHOW AND TELL



Joe McDaniel



Lalo Gonzalez



Lalo Gonzalez



Gene Davis



Frank Schmidt



Max Hernick



Roger Glennon



Bob Miller



Max Hernick



John Hunter



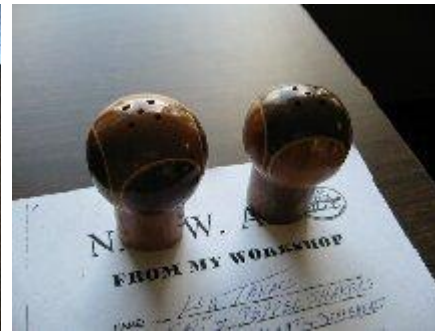
Bob Rinearson



Phil Malavolta



Dick Sader



Lou Takacs

CLUB PICNIC

A reminder to our members: our club picnic is August 29th at Hidden Lake Park. We will be in the pavilion closest to our meeting site. Please let Claudia Brazil know if you are coming (unless you already have) so that she can get a head count for how much food needs to be purchased. Also bring a gag gift wrapped in newspaper for the Bingo and a desert. Park rules are that no glass containers are allowed.

Bob Flexner's Finishing Tips

<http://www.thefinishingstore.com/>

TIP: Finish Important Parts Last

Whether brushing or spraying, always finish the most seen and touched surfaces such as tabletops and chair backs last to avoid runs and overspray showing up on these parts.

For example, finish the legs, rails and the edge of a tabletop and then brush or spray the top (being careful not to drag your brush over the edge and create runs). On a chair, turn it over and finish the insides of the legs and rails and then the outsides. Stand the chair up and finish the backside of the chair back, the arms and finally the chair seat and front side of the back.

Recycling

A reminder to bring your used computer printer cartridges to the meeting, give them to Claudia Brazil. The club earns money for these that help pay for our many programs.

Dust Collection - For the SAFETY of you and your home

The topic for our August 2010 meeting is Dust Collection. This topic is very important and confusing. I've tried to put together some information about dust collection, so we all have some basic understanding of the topic. The meeting will include a PowerPoint presentation and use of a questionnaire, which you should fill out and bring to the meeting (it is in this newsletter and will be used for the raffle of an "Oneida" dust deputy collector) - Lou Takacs

We all get covered in sawdust from our work in the shop. What's the BIG DEAL about a little sawdust?

Well, the BIG DEAL depend on the wood you are working with, are there any sources of combustion in the area you are working, and are you allergic to that wood dust. In short, a part time hobbyist woodworker in a few hours work gets exposed to far more dust than most workers in larger commercial facilities receive in months. Most large woodworking facilities have long blown their fine dust away outside, but most small shop woodworkers trap that fine dust inside. As a result California government air quality testing shows small shops that vent their dust collection inside average two to five times the typical airborne dust levels found in commercial facilities. This is not good news for small shop woodworkers.

Excessive exposure to certain kinds of wood dust can cause ailments including, bronchial asthma, rhinitis, bronchitis, allergic dermatitis and others. Micro-organisms and fungus (spalted wood) can induce asthma and other reactions.

Some woods such as yew can act as sensitizers. When first used, there is no reaction, but after repeated exposure the user may become so that an almost immediate reaction occurs. Some other woods that can act as sensitizers are, beech, walnut, mahogany, redwood, teak, and willow. Cancer of the upper respiratory tract can be caused by many types of wood dust, especially beech and oak. Subtropical and tropical woods noted for allergic reactions include cocobolo, ebony, and rosewood to name just a few.

Also the dust from bonded wood products such as plywood and MDF can be an irritant.

I know this sounds pretty bad and you wonder what woods can we work with without any fear of the dust. The answer is pretty much none. You need to protect yourself from exposure but it's not really that hard to do. You just have to make it a practice to use the right equipment and take some precautions. Some useful guidelines are:

- Work in a well-ventilated area when possible
- Wash your hands and body exposed to the dust. A shower after an afternoon in the shop is a good idea.
- Change and wash work clothes.
- Avoid particularly toxic woods if possible
- Wear gloves if necessary
- Wear a respiratory, or at least a face mask (the kind you get from the pharmacy -you see them during flu season in doctors' offices, not a cheap paper mask that doesn't fit right)
- Install an effective dust extraction system in addition to a mask

Another safety concern of working with wood is that the dust is very flammable. If you have an open flame near where you are working, a fire could start from the sawdust build-up on your equipment. A smoldering fire in some sawdust could ignite hours after you are out of the shop and lead to a major fire in your shop and/or home. Cleaning up and vacuuming on a regular basis not only keeps your shop clean but safer.

DUST COLLECTION BASICS

Airflow:

Dust collection manufacturers provide dust collection design firms with both Air Volume Requirements tables and Airspeed Requirements tables so these firms can design commercial air systems that will carry materials without plugging or building up piles in the ducting.

Airspeed:

Most air engineers recommend we design our dust collection systems to maintain a duct speed of 4000 FPM in our mains to keep our ducting clear and keep the chips and sawdust entrained, meaning airborne. This 4000 FPM has become an industry standard that is well tested and proven solidly to work to move the dust, but it does not collect the dust.

Air Volume:

We also need to know how big of a volume of air is needed to be moved at each machine to collect the dust. This is measured as CFM - Cubic Feet per Minute. Good chip collection on almost all hobbyist larger stationary tools requires between 350 to 450 CFM. Both the math and testing show we need to provide close to 800 CFM air volume movement to get good fine dust collection.

Ducting Size:

The hobbyist tool industry is stuck on the older 4" diameter ducting that was only ample to collect the chips at the old 450 CFM standard. Although many mistakenly think of their dust collectors as giant vacuums, they really are not. The resistance of our ducting pipe and hoses is so high that a 1 hp dust collector will only give us a real 195 CFM with a 3" pipe, 350 CFM with a 4" pipe, and 550 CFM with a 5" pipe. Dividing CFM/FPM gives ducting area in square feet which converted to a diameter shows we need 6" pipe to get our needed 800 CFM airflow and 4000 FPM duct speed. Making our ducting look pretty by using all different sized down drops kills the airflow in our mains causing them to build up dangerous dust piles. Most small shops need to use just 6" duct throughout their dust collection system.

CFM REQUIREMENT TABLE:

The following CFM requirements table gives the airflows required at each size and type of stationary woodworking tool to meet different dust collection standards. American Air Filter (AAF) was one of the leading firms who built fine dust collection systems and filters to meet government air quality requirements. They were kind enough to a website source to share their proprietary airflow tables to counter some of the massive confusion over airflow requirements for small shop woodworkers. Remember this below table is useless unless you start by upgrading your hoods. (NOTE: Hoods on tools is important to controlling and collecting the dust.)

CFM Caution Please realize that this table shows the airflows needed for the different levels of collection for larger tools. For smaller shop tools with smaller ports we often need far less airflow, but at much higher pressures than can be delivered by dust collection systems. For these smaller tools we often need a powerful shop vacuum with fine filter, sometimes a down draft table, and often a portable hood connected to our main dust collection that we can move to where we are making sawdust and chips.

Resistance to flow:

The overall resistance in our dust collection system, known as static pressure, defines how big of a blower we need to power our system and move the desired air. Our overall static pressure is a sum of the resistance of our ducting plus all other resistance in our system. Those with no ducting who move a 10' flexible hose between machines end up with about 4" w.c. resistance for their systems. Those with shops sized about the same as a one-car garage with ducting end up with about 6" of resistance for their ducting. Most hobbyists have shops sized about the same as a two-car garage and end up with about 8" of resistance. Those with three-car garage sized shops have about 10" of ducting resistance. Trashcan separators will typically add about 4.5" of static pressure if used. Mufflers will add resistance depending upon type.

Exhaust Requirements for Woodworking Operations

Recommended Duct Velocity 4000 FPM

This table assumes replacment of stock dust hoods and tool ports!

Equipment	Unit of Measure	Size		Chip Collection	OSHA Required Exhaust CFM			ACGIH Required Exhaust CFM			Medical (Euro) Recommended Exhaust CFM		
					Bottom or Back	Top	Total	Bottom or Back	Top	Total	Bottom or Back	Top	Total
Circular Saws: Table, Miter, Compound, & Radial	Blade Diameter In Inches	Up to 16 incl.		350	440	350	790	495	394	889	550	438	988
Band Saws (Note:1)	Blade Width In Inches	Up to 2 max		400	350	350	700	394	394	788	438	438	875
Drill Press, Scroll Saw or Disc Sander (Note:2)	Disc Diameter In Inches	Up to 12 incl.	Duct A	300	-	-	350	-	-	394	-	-	438
Drum & Spindle Sanders (Note:3)	Surface Square Inches & Drum Length	Up to 200 (3" long)		300	-	-	350	-	-	394	-	-	438
		200 to 400 (to 16" long)		400	-	-	550	-	-	619	-	-	688
		400 to 700 (to 20" long)		500	-	-	785	-	-	883	-	-	981
Horizontal or Vertical Belt Sander (Note:4)	Belt Width In Inches	Up to 6		300	450	350	790	506	394	889	563	438	988
		Over 6 to 9 Incl.		400	550	350	900	619	394	1013	688	438	1125
Jointers	Knife Length In Inches	Up to 6 Incl.		350	-	-	350	-	-	394	-	-	438
		Over 6 to 12 Incl.		400	-	-	440	-	-	495	-	-	550
		Over 12 to 20 Incl.		500	-	-	550	-	-	619	-	-	688
		Over 20		600	-	-	800	-	-	900	-	-	1000
Shapers	Bore Size	Up to 1.25" bored cutters		400	550	350	900	619	394	1013	688	438	1125
Planers	Knife Length In Inches	Up to 20 Incl.		400	-	-	785	-	-	883	-	-	981
Floor Sweep	The 350 CFM volume needed for floor sweeps is generally not included in computing total exhaust requirements because normally in small shops the sweep blast gate remains closed when other tools are running.												
<p>Note 1 - Connect one branch pipe to the hood under table; the second branch at a point near the floor on the up run side of the lower wheel. Enclose the entire lower wheel to form the hood.</p> <p>Note 2 - Requires full auxillary hood or hoods (see hood samples)</p> <p>Note 3 - All entries under exhaust volume are expressed in cubic feet per min. One hood per drum is minimum. Additional hood at feed side is desirable.</p> <p>Note 4 - "Bottom" column refers to head end CFM and "top" column to tail end CFM.</p> <p style="text-align: center; color: blue;">OSHA values provided by AAF (May 3, 2001) - Chris O'Connor, APC Sales Manager</p> <p style="text-align: center; color: blue;">Update With ACGIH and Medical Recommendations Copyright B/Pentz 3/23/07</p>													

<http://billpentz.com/woodworking/cyclone/DCBasics.cfm#CFMRequirementsTable>

Blower Size:

Blower sizing is something we can easily look up once we know the overall resistance of our system and the airflow requirement of our largest tool. Almost all hobbyist blowers are standard material movement pressure blowers and almost all are turned by fixed speed 3450 rotation per minute (RPM) motors, so all have very similar efficiency. To use the following table we look down the column with the resistance calculated for our shop until we find an entry that meets our required airflow of generally 800 CFM. The table then shows the impeller diameter, required horsepower, and gives the ideal blower opening. A fan table is critical in helping us size both our blower impeller and motor for an

effective dust collection system. Based on the below fan table, most small shop woodworkers that use a cyclone separator with fine large cartridge filters need at least a 13" impeller turned by a 3 hp motor. Since 13" impellers are very difficult to find, we mostly end up buying 14" or larger impellers.

Hobbyist Fan Table for Shop with Ducting, Cyclone, and Cartridge Filters																							
Capacity Table for 3450 RPM Direct Drive Blowers										Ratings at 70 F., .075 Density, Sea Level						1/22/2008							
Fan Table			Shop with no ducting (10' of 6" flex)				Small 1 car garage sized shop with normal ducting				Medium 2 car garage sized shop with normal ducting				Large 3 car garage sized shop with normal ducting								
Static Pressure ->			4		5		6		7		8		9		10		11		12		13		
Ducting Size	Minimum BC Wheel	Min. hp Required	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	
6	9"x3"	0.50	319	0.49																			Grey: Exceeds blower capacity
6	10.25"x3"	0.50	344	0.42	283	0.38	211	0.33															Pink: Too Little CFM
6	11"x3"	1.00	580	0.88	511	0.81	425	0.71	306	0.59													Lt Blue: Picks up chips
7	11"x3"	1.00	642	0.88	543	0.79	419	0.89	181	0.51													Blue: Collects to OSHA Std
6	12"x3"	2.00	878	1.55	790	1.44	686	1.33	520	1.17	374	0.83											Lt Green: Collects to ACGIH Std
7	12"x3"	2.00	888	1.53	799	1.43	694	1.33	527	1.17	380	0.84											Green: Collects to EPA/Med Std
6	13"x3.25"	3.00	1114	2.21	1038	2.09	952	1.97	858	1.82	748	1.65	612	1.42	429	1.11							Red: Burns up motors
7	13"x3.25"	3.00	1134	2.17	1054	2.07	968	1.96	872	1.83	759	1.68	617	1.46	414	1.10							
6	14"x3.25"	5.00	1372	3.44	1296	3.28	1218	3.12	1136	2.95	1049	2.77	954	2.57	846	2.34	713	2.05	524	1.62			
7	14"x3.25"	5.00	1423	3.56	1338	3.42	1254	3.26	1167	3.10	1078	2.91	983	2.69	877	2.43	753	2.12	580	1.69			
6	15.5"x5"	5.00	1801	4.84	1715	4.67	1628	4.50	1538	4.34	1445	4.16	1347	3.98	1242	3.76	1126	3.53	996	3.26	815	4.50	
6	15.5"x5"	7.50	2171	7.73	2099	7.50	2024	7.28	1947	7.05	1866	6.80	1666	4.80	1520	4.47	1384	4.12	1189	3.73	949	3.16	
6	16.50	7.50	2028	6.06	1942	5.9	1850	5.71	1755	5.51	1656	5.29	1554	5.06	1449	4.82	1338	4.55	1219	4.26	1146	4.09	
8	16.50	12.50	3333	12.87	3239	12.58	3118	12.13	2996	11.66	2871	11.18	2748	10.71	2586	10.22	2399	9.43	2215	8.69	1427	4.79	

Notes: This table assumes you have average ducting, that all ducting and hose is the same diameter, that you do not use any commercial tools with large CFM requirements, that all your machine ports all total 6" in duct area, that you use fine cartridge air filters with at least 400 square feet of area to minimize airflow resistance, and that you use a high efficiency cyclone. It also assumes you use the specified blower inlet size connected to your cyclone and that you do not have any airflow restrictions in your ducting. Reducing the inlet size, adding constrictive ducting, hoods, flex hose, filters or separator greatly increases resistance and air flow. Overcoming that resistance requires a larger diameter impeller and often much more horsepower. The amount of ducting resistance is shown for average small, medium, and large shops. Use a good static calculator to verify the resistance for your shop. Using 30 micron filter bags will add an additional 2.5" static pressure and about 1.0 for the high flow fine filter bags. Using a trash can separator adds about 4.5". Using a standard hobbyist cyclone adds between 2" and 2.5" more resistance depending on size and design.

Final Filters

Final filters keep the dust from going airborne. For wood dust a filter should stop 99.9% in the .02-.2 microns range which is 100% of wood dust. They need to meet the testing of ASHRAE or BIA standards.

Summary:

- **Make sure the fine dust is not blown away and scattered all over the shop before it can be captured by having well designed or carefully modified tools and hoods**
- **Provide enough air volume (CFM) at each tool to collect the fine wood dust at the source before it escapes**
- **Make an efficient system with large enough ducting and cleanly designed duct runs to efficiently move the volumes of air we need at each tool**
- **Keep the air speed (FPM) fast enough to move the dusty air so we do not get plugging or dangerous dust piles in our ducting.**
- **Use filters large enough to support the volumes of air we move with filter material independently certified to provide sufficient fine dust filtering.**

A lot of good independent info on dust collection can be found at: <http://billpentz.com/>

Good information on dust collection but with a sales orientation: <http://www.oneida.com/>

DUST COLLECTION QUESTIONNAIRE

Fill out and bring to the August 2010 meeting. This questionnaire will be your ticket for the raffle of an Oneida Dust Deputy which has a price of \$99.00 on the Oneida website .

The number of correct or wrong answers is not important for the raffle, just your health and safety.

MEMBERS NAME: _____

1. Having a clean shop vac attached to your orbital sander is all the dust protection you need?
True or False (Circle correct answer)
2. Wood dust of certain woods can cause skin irritation?
True or False (Circle correct answer)
3. Which of the following wood dusts have been linked to upper respiratory cancer?
A. Cherry
B. Oak
C. Maple
(Circle correct answer)
4. You should wear a respirator or good dust mask in your shop because of all of the fine dust that gets airborne whenever a tool is run?
True or False (Circle correct answer)
5. A precaution you can take is?
 - a. Wash your hands and body exposed to the dust
 - b. Change and wash your cloths to avoid transporting dust into the living areas
 - c. Install an effective dust collection system
 - d. Wear a face/dust mask
 - e. All of the above(Circle the correct answer)
6. For keeping the ducts clear of build-up of dust and chips you need a duct airspeed of?
 - a. 2500 FPM (Feet per Minute)
 - b. 3000 FPM
 - c. 4000 FPM(Circle the correct answer)
7. The size of duct that most small shops need to use is 4" pipe?
True or False (Circle correct answer)
8. To collect fine dust a system needs to have 700 CFM of air volume?
True or False (Circle correct answer)
9. Wood dust is explosive?
True or False (Circle correct answer)
10. Final filters are not needed on a cyclone dust collector?
True or False (Circle correct answer)

Products Used in Toy Making

Due to the new laws on child safety and its effect on our clubs Toys for Kids program we need to put together a list of items that are being used in the construction of these toys. This includes paints, glues and fasteners. We hope to put together a list of approved products that will meet the guidelines of these new laws. Please fill out this form and bring it to the next club meeting if you donate any toys.

Manufacture: _____

Manufacture Contact Information: _____

Product Name: _____

How Used: _____

Manufacture: _____

Manufacture Contact Information: _____

Product Name: _____

How Used: _____

Manufacture: _____

Manufacture Contact Information: _____

Product Name: _____

How Used: _____

Manufacture: _____

Manufacture Contact Information: _____

Product Name: _____

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How Used: _____

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Manufacture Contact Information: _____

Product Name: _____

How Used: _____

L. L. JOHNSON'S LUMBER SAWMILL & WORKBENCH WOODWORKERS STORE - WOOD EXPO 2010

CLUB ROAD TRIP

The L.L. Johnson Lumber Manufacturing and Johnson's Workbench Store (similar to a Woodcraft Store) will be having their annual WOOD EXPO on Friday September 10 & Saturday September 11 (9am-4pm). They are located at 563 N Cochran Ave, Charlotte, MI. In the past our club has gone to this event by bus and caravan. There are many demonstrations (Scott Phillips usually does a few demos) and seminars along with some great sale prices on lumber and tools. Also, Charlotte is the location of the Home Shop of John Wilson for Shaker Oval Box kits and supplies.

We are proposing that we caravan this year on Saturday. Charlotte is about 2 ½ hours from Valparaiso or 2 ¾ hours from Highland down I 94. We would meet near the Chesterton Exit at the Indian Boundary Rd McDonald's around 6:30 am as Charlotte is 1 hour ahead. There usually is a craft and art festival in the downtown area, which is only a couple blocks from the lumberyard, well within walking distance.

We will have a sign-up sheet at the August Meeting

To get to Charlotte, MI :

Take I94 East

Turn onto I 69 North

Exit at Exit #57 /Cochran Rd

Take Cochran Rd to Johnson's

ITEMS FOR SALE

If you have any wood working related items that you wish to sell through the newsletter please contact Lalo Gonzalez LaLogon@sbcglobal.net or John Hunter john.b.hunter@verizon.net Include a description and the price you are selling them for, also how you may be contacted.

CALENDAR OF EVENTS

August 26	Membership Meeting at Hidden Lake (Dust Collection Program) 7 PM
August 29	Club Picnic at Hidden Lake 12 Noon
September 21	Committees Meeting at Hidden Lake 7 PM
September 23	Membership Meeting at Hidden Lake (General Finishes Sheryl Monahan) 7 PM
October 4	Executive Board Meeting at Lake County Library 6 PM
October 19	Committees Meeting at Hidden Lake 7 PM
October 28	Membership Meeting at Hidden Lake 7 PM
November 16	Committees Meeting at Hidden Lake 7 PM
November 18	Membership Meeting at Hidden Lake (Toy Program & Elections) 7 PM
December 16	Membership Meeting at Hidden Lake (Christmas Party & Awards Banquet) 7 PM
December 21	Committees Meeting at Hidden Lake 7 PM

HUMOR

Bob had a lot of work ahead of him so decided to hire a part time helper.

"Your first job will be to sweep up the sawdust." he said handing him a broom.

"Look I'm practically a university graduate," the young man protested.

"No problem, I'll show you how," Bob replied

2010 Committee Members

President Lou Takacs
Vice President Dick Sader
Treasurer Charlie Morris
Secretary John Hunter
Achievement John Hunter
Audit Bill Harbison
Badges Elizabeth Carlsson
Bargain Alerts John Hunter
Christmas Exhibit Nancy & Merle Distel
Christmas Party Claudia Brazil & Marcie White
Community Liaison Dick Sader
Discounts Paul Jarrell
Drawings Phil Malavolta
Exhibits Marcie White & Phil Malavolta
Field Trips Leon Kozlowski
Fund Raising Norm Johnson
Hats & Shirts Fred Baginski
Historian Art & Helen Willing
Hospitality Charles Norman
Lake County Fair Lou Takacs
Library Bob Roach
Membership/sign-in George Salatas
Mini-Seminars John Sturk & Bob Miller
Newsletter Editor Hilario (Lalo) Gonzalez (lalogon@sbcglobal.net)
Nominations Joe McDaniels
Parliamentarian Joe McDaniels
Pattern Master Stanley Wagner
Photographer Fred Baginski
Picnic/Party Marcie White, Claudia Brazil, Lou Takacs
Publicity John Sturk
Program John Hunter
Recycling Claudia Brazil
Shop Visits Dick Sader
Show & Tell Denny McCool & Max Hernick
SIG Carving Carl Mills
SIG Scroll Saw Dick Sader
SIG Turning Denny McCool
Toys for Kids Bob Roach, Claudia Brazil & Skip Brazil
Videographer Carl Mills & Max Hernick
Website Bob Roach

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