



The ABC's of Diemaking & Diecutting

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Editorial: Cross Training is Vital! "Fear is an emotion indispensable for survival."

Most professionals would describe the challenge of training and retraining as a key obstacle to productive improvement in converting manufacturing. Their mistaken perception is it would be very difficult to create and maintain an effective training manual or guide. In reality every company has a training system already in place. Every day every member of every team is executing procedures following a "more or less" standard pattern of tasks and activities. Training is simply the practice of teaching these procedures to enable each team member to perform tasks effectively without assistance. Therefore, the basis for a pragmatic training program is simply a list of all of the standard procedures and actions, which are currently required to complete each key activity.

Standard Operating Procedures

A standard operating procedure is simply a list of steps within each discipline, which are sequenced, which are described simply, and which are given a "benchmark"

Standard Operating Procedure		PLATEN DIECUTTING: PRESS FOOTPRINTING							
SOP #:	04-05	Version #:	04.2	Department:	Pre-Press & Diecutting	Discipline:	Press Make-Ready	Page #:	4.1
Inception Date?	22-04-05	Update?	11-09-05	Approved by?	Rom	Trainee?	TK	Trainer?	RCB
Training Date?	June 05								
Step	Action	Comments	Safety	Speed	Quality	Activity Time	Elapsed Time	Cost:	
1	Position the paper, squarely on the cutting plate, aligned with the leading edge of the plate, and tape securely.	Tape corners only, of the new Press Mapping Sheet, to create a flat taught sheet.	Team Alpha	Team One	Team Driven	03 Minutes	03 Minutes	\$75	
2	Position a sheet of carbon paper, face down on the paper, completely covering the sheet.	Use 0.005" Bar-Plate Carbon Paper	Team Alpha	Team One	Team Driven	03 Minutes	06 Minutes	\$75	\$150
3	Using previously recorded pressure, gradually increase press tonnage, until the knives begin marking the match-up sheet.	Keep a Pressure Record for every setting in the footprinting sequence	Team One	Team One	Team Driven	05 Minutes	11 Minutes	\$125	\$275
4	Mark the Outer Impression Perimeter or Outer Layer of the first pressure level.	Use a Black Felt Marker to mark the first Pressure Layer	Team Alpha	Team One	Team Driven	07 Minutes	18 Minutes	\$175	\$450
5	Increase pressure slightly, record the pressure setting and take a second impression	Make a note of the pressure setting, and add the setting to the Press Mapping Sheet.	Team Alpha	Team One	Team Driven	02 Minutes	20 Minutes	\$50	\$500
6	Using a different colored Marker, outline the second pressure layer.	Use a Red Felt Marker to mark the second pressure layer.	Team Driven	Team One	Team Alpha	03 Minutes	23 Minutes	\$75	\$575

time standard. The type of preliminary tool used to capture and define each procedure is shown *above*. As soon as all of the procedures are documented in this manner they can be assembled into a training map. *See right*. This is simply a method of listing all of the standardized procedures for each activity in a priority in which they would normally be taught. To qualify each team member in each standard procedure, a format is developed which the trainee's peers execute. *See column one, page 2*.

In other words as the team members have created the procedure who better to approve and to certify each team member in the execution of the series of tasks? These simple methods are so practical an approach to training, every company

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could start building a Training Map immediately. To further enhance this education effort or even *to replace it*, each procedure should be captured on video as this is the most effective method of teaching and training, particularly where language is an issue.

Cross Training

Most organizations have several key positions where highly skilled and experienced individuals perform tasks, which are critical to the flow of work. In other words if they are not in position and performing their daily function, the company begins to immediately experience a bottleneck or a breakdown in the flow of manufacturing. These unique individuals represent

Job Position	PRESS ASSISTANT		PRESS OPERATOR			PRE-PRESS OPER.
	General Duties	Pre-Press	Press/Area Purge	Changeover	Pre-Make-Ready	
STANDARD OPERATING PROCEDURE						
John Smith						
Mary Jones						
Susan Anthony						
Peter Carew						
Julio Sanchez						
Angela Green						
Andrew Barry						
Teresa Brandon						
Miguel Garcia						
Steven Roberts						
Warren James						
Margaret Devon						
Philip O'Dol						
Miguel Gonzalez						
Jim Webb						
Ray Webber						
Keith Richards						
Christine Rhodes						
Julio Herrera						

both the strengths and the potential weaknesses of the organization. What happens if they are on vacation, if they are unable to work, if they have a family



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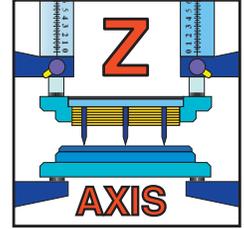
"There is no substitute for knowledge, nothing else matters, it is the most important ingredient." Dr. W. Edwards Deming

emergency, if they are overloaded with work, or if they are stolen by a competitor? Although we hope and pray this will never happen this *Ostrich like Attitude* will not prepare us for the inevitable.

Press Footprinting: A Critical Procedure in New Press Approval

"The only relevant test of the validity of a hypothesis is comparison of prediction with experience." Milton Friedman

TASK PERFORMANCE EVALUATION: PROCEDURE: Leveling The Impression	
Trainee:	Evaluator:
Date:	
STEP 1	UNSATISFACTORY MARGINAL GOOD VERY GOOD EXCELLENT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Calculate the preliminary tonnage adjustment from the job format, job history, and press characteristics	Comments/Suggestions
STEP 2	UNSATISFACTORY MARGINAL GOOD VERY GOOD EXCELLENT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Set the preliminary tonnage and take a single sheet impression	Comments/Suggestions
STEP 3	UNSATISFACTORY MARGINAL GOOD VERY GOOD EXCELLENT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Examine the back, and the front of the diecut sheet for full penetration, and pressure variation, and mark the low areas.	Comments/Suggestions
STEP 4	UNSATISFACTORY MARGINAL GOOD VERY GOOD 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
Select appropriate area patch-up material and tear to the shape(s) of the low pressure areas.	Comments/Suggestions



Diecutting is a stamping process, which requires the interaction of a male steel rule die with a female anvil to trap, diecut, and convert the material trapped between the upper and lower tools. The ability to kiss cut perfectly and/or the ability to precisely set the platen gap between the knife edges and the cutting plate or anvil, *see above*, is the most important setting in

FLATNESS



PARALLEL



DEFLECTION



It is vital to train back-up's for these individuals. This may not require the full range of skills but the replacement should have enough knowledge and competence to man the role for a short-term emergency. What is the basic information for someone filling one of these key roles? What are the minimum skills? Does the back up have the ability to fulfill the role in an emergency situation?

Even training a back up is not effective if the person is not allowed to perform the task on a regular basis and experience the dynamics of a pressure position. Therefore, these key replacements must be trained and regularly given opportunity to practice their skill in real world production. Far better to do this when the person responsible for the position is on site to help out in case of difficulty or an emergency.

Summary

Who are your key players? Are key activities videotaped with a voice overview? (Simple, effective, inexpensive, and something which can be done today!)

Do you have fully trained back-up personnel capable of effectively performing a key person's tasks and responsibility? How have they proven to you they are competent?

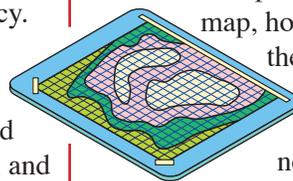
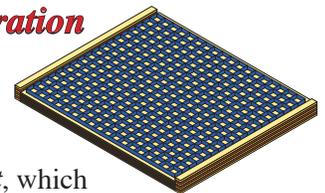


When was the last time they fulfilled their back-up role?

It is so easy to get complacent. Determine who your key players are. Identify and verify the competence of their back up. **Now, because tomorrow may be too late!**

Press Footprinting-Calibration

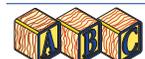
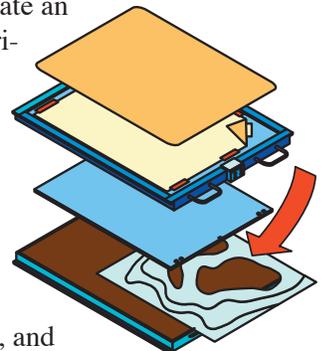
Press footprinting is simply a foundation practice in platen diecutting. This requires the creation of a *Mapping Die*, *see right*, which will be used to precisely measure, record, or



map, how level the press surfaces are, how far they are out of parallel, and how much the press distorts under impressional load.

By footprinting the press in this manner, the technique will generate a map of the various layers or levels of variation across the entire cutting surface of the press. *See left*. This map can then be used as a guide to create an accurate underlay from foil materials, which will be permanently positioned under the cutting plate of the press. *See right*.

This has become a standard practice in platen and cylinder diecutting as this compensation for the inevitable variability of a mechanical press is simple, fast, and

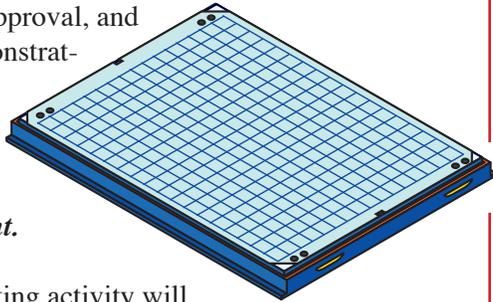




very effective. However, it is rarely used in the approval for a new press or for a machine, which has been refurbished.

Press Approval Calibration

Press footprinting is important because it simplifies the creation of a stable kiss-cut cutting make-ready, it reduces the damage and extends the life of the steel rule die, and it ensures faster press speed and yield, with greater quality and product consistency. Therefore, why not make this a key part of new press approval, and is most easily demonstrated in the balanced kiss cut impression generated by the press footprinting procedure. *See right.*



The Press Footprinting activity will demonstrate several key press characteristics, which are vital to long term productive output.

- Is the press flat, parallel, and deflection free?**
- What is the Press Pressure Distribution Pattern?**
- Are there potential mechanical problems?**

Conducting a press calibration procedure will help the press manufacturer to fine tune the mechanical level of the press, it will show any potential problems, and it will ensure the customer will generate excellent diecutting quality and productive output. Press calibration must be completed in any case, as this is the only method of eliminating the majority of patch-up adjustment, and steel rule die knife-edge damage.

Summary

"The test of a man lies in action." Pindar

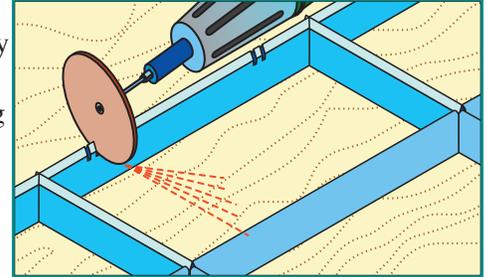
Press calibration is a well-established practice, which generates consistent productive benefit. As it is so important to daily diecutting, why would this not be a key part of both the approval and sign off procedure for the new press, and the logical first step in preparing the press for efficient converting manufacturing?

With the calibration complete the press manufacturer can leave with the knowledge the press is precisely set up for high speed, exceptional quality diecutting. And the company and press crews know they have a press in perfect condition for fast, kiss cut make-ready performance.

An Essential Nicking Tool: The Needle File

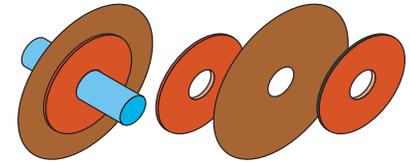
"We can't solve problems by using the same kind of thinking we used when we created them." Einstein

One of the critically important techniques in diecutting is the creation of gaps in strategic locations around the profile of each cavity in a steel rule die layout. These "nicks or tags" are designed to link all of the individual pieces of product and waste for transportation through the diecutting press.



The most common practice is to use a grinding wheel to actually machine a gap of a specific width into the cutting edges of a knife. *See above.* Although much progress has been made, the smallest size of wheel which can be conveniently used is 0.008"; however, smaller wheels can be used if plastic collars support them. *See right.*

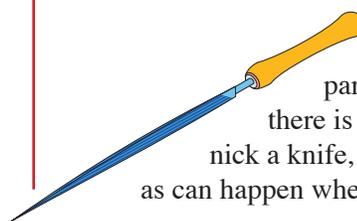
Nicking Wheel Supporting Washers



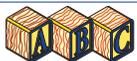
The Needle File

But there are many situations where the size of the nick required is almost invisible and all the diecutter is doing is to damage a small are of the knife to generate enough retained fiber to hold the diecut sheet or web together. To accomplish this successfully many diemakers and diecutters rely upon the very effective needle file. *See below.* These can be purchased at most hardware stores or from automotive supply operations.

The needle file is very effective as it can be used to make minute gaps in awkward shapes such as punches and rules, which are very close together. The needle file is very effective at slightly widening an existing ground nick. It is particularly useful on-press where there is no need to remove the rubber to nick a knife, and the knives are not unseated as can happen when using a chisel to widen a nick.



The needle file is a great nicking aid, which should be in the toolbox of any professional diemaker or diecutter.



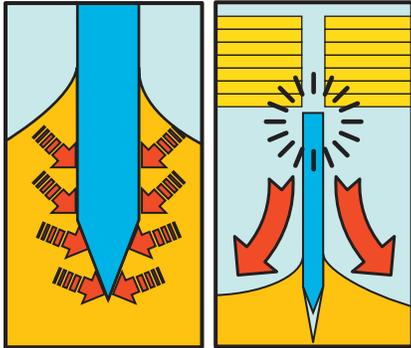


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"An individual without information cannot take responsibility; an individual who is given information cannot help but take responsibility." Jan Carlzon

Pinning Knives in Existing Dies

"In order to form an immaculate member of a flock of sheep one must, above all, be a sheep." Einstein



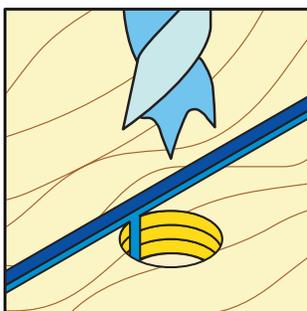
When diecutting dense or very thick material, the knife edges are so tightly held by the material the opening of the platen gradually pulls the knife out of the dieboard. *See left.* Many of these dieboards are gradually weakened by

the constant flexing stress diecutting this material causes. Naturally, the design of the dieboard is important and the number of bridges added to knives in this type of application is vital. The more bridges in the die the better, as the bridges strengthen and stiffen the dieboard to minimize kerf and knife flexing. The solution to this type of problem is to pin the lower section of the steel rule from the back of the dieboard. *See right.*

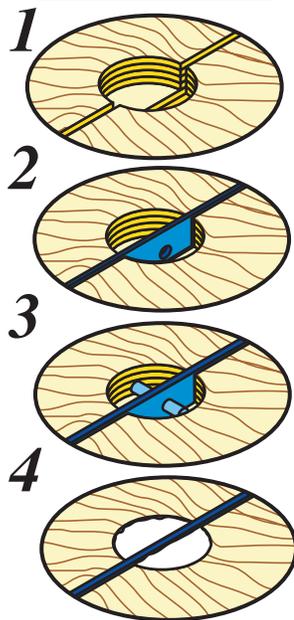
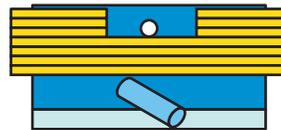
Unfortunately the need for pinning a dieboard is often discovered after the dieboard has been finished and used. Most diemakers insist the dieboard should be replaced or completely reruled and reworked as a result. However, it is relatively simple and inexpensive to pin an existing steel rule die with minimal expertise.

Preparing the Dieboard

The dieboard is inverted on a bench, however, preferably under a drill press mounted on a standard diemaking jig saw. However, if the jig saw, or a drill press are unavailable, the pinning holes can be drilled by hand using a standard electric drill. First shallow holes are drilled against the knife to be pinned. *See left.*



A center punch is then used at an angle to give a starting point for lateral drilling of the knife for the



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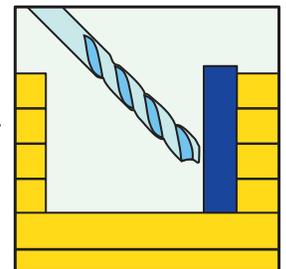
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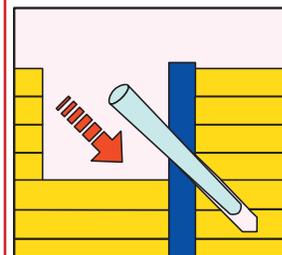
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insertion of a pin. The hole is then drilled through at an angle through the knife and into the dieboard on the other side of the blade. *See right.* (It should go without saying the drill should be a high quality tungsten carbide bit, it should be in perfectly sharp condition, and it should be capable of drilling through the steel rule knife with ease.

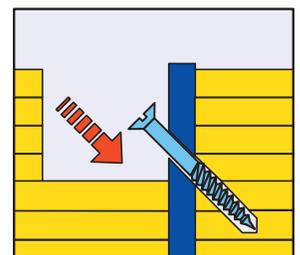


To secure the knife a tapered pin is driven through the hole in the blade and into the dieboard. *See left.* Alternatively a wood screw or more effective, a machine screw can be used. *See below.*



Although this is faster and simpler than using a tapered pin, it is important when using a screw or a pin to avoid pushing the knife out of position, either up or down in the kerf channel.

The size of the tapered pin and/or the machine screw driven through the steel rule and into the drilled hole in the side of the knife should be such the tapered pin/screw is locked into position in the knife at its mid point. The hole in the





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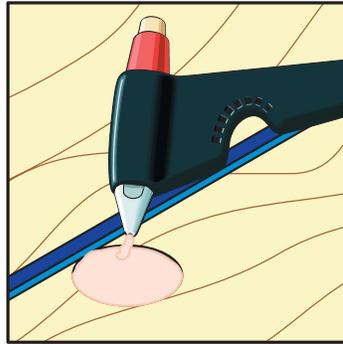
"Imagination is more important than knowledge." Albert Einstein

dieboard is now simply filled using a standard glue gun. *See right.*

This is fast, simple, and effective!

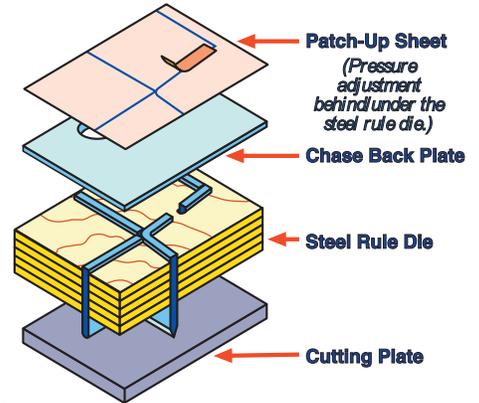
Summary

Steel rule die pinning is often a necessity, however, the diemaker and the diecutter should examine the design and construction of the dieboard to eliminate the problem at the source. If it is deemed necessary to pin the knife in the die it should obviously be done as part of the original fabrication of the tool. However, where the die is complete and has been used, pinning the knife is relatively simple to achieve.



using patch-up tape materials? *See right.*

What is this compensation adjustment for? Is it because the die is not level? Is it because the press is not level? Or is it because the gap between the cutting die and the cutting anvil is too wide? See below.



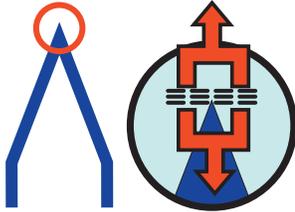
In diecutting the principle source of variation is the unevenness of the dieboard.

Correct Dieboard Ruling Procedures

Question: Why is it critical that every rule in a steel rule die protrudes through the back of the dieboard?

It is important the diemaker understands how the steel-rule dieboard works and how critical features impact on-press cutting performance. In principle the dieboard is simply a

Plus 0.0005"
Minus 0.0000"



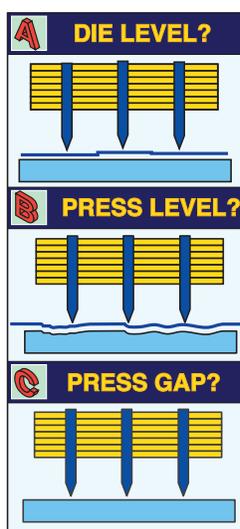
toolholder. It has one purpose and that is to hold the steel rule knife in position to stamp a shape from a substrate.

In platen diecutting and in soft anvil diecutting it is important every knife is seated at the exact same height and there is nothing

which interferes with action of the tip of each knife as they penetrate the stock.

The majority of steel rule knife is targeted at exacting tolerances seeking a height of plus 1/2 thousandth of an inch and a negative value of zero. *See above.* Anything, which undermines the precise distance between the tip of each knife and the cutting plate, will severely undermine converting quality and lead to rapid damage to the cutting edges of the die.

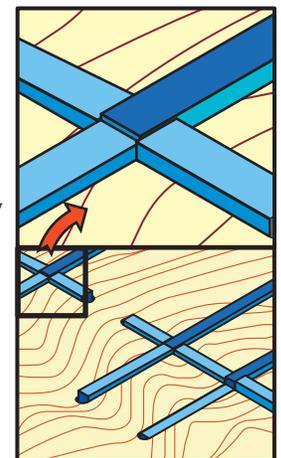
If the die is made as precisely, as accurately and as consistently as it is claimed, why is it necessary to shim the die



There is a simple test to be conducted using a die which has already been on press and completed one or more production cycles. Turn the die upside down and examine the seating of all of the steel rule knives and crease in the dieboard. Inevitably many knives and creasing rule are not correctly seated, *see below*, even after repeated production cycles.

And, if you examine the patch sheet used for the specific die being evaluated, you will

find a direct correlation between the amount of patch-up and the seating of the knives. This is simple to verify by going to your existing die storage and taking any die and conducting a rigorous examination of the seating of the knives on the back of the die. By the way, this should include creasing rules also, as they are a source of high resistance and pressure instability in diecutting.



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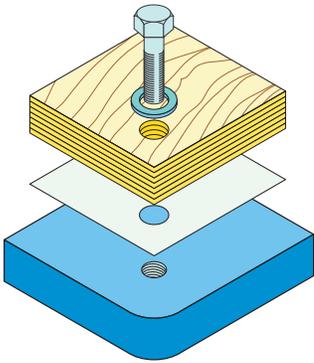
The correct method of ruling a dieboard requires mounting the die on a calibrated steel table, with a layer of 0.005" paper between the dieboard and the table surface. The





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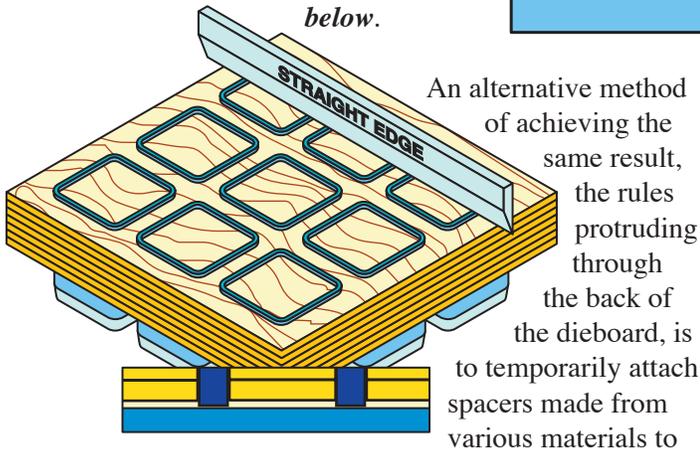
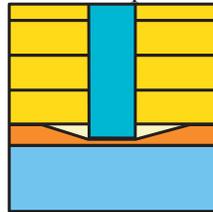
"Good instinct usually tells you what to do before your head has figured it out." Michael Burke



dieboard is then bolted or clamped to the surface of the table. *See left.* As the die is ruled and each knife is planed and seated level in the dieboard, the base of each rule indents the layer of paper material. *See below.*

When the dieboard is complete and inverted

for cleaning the rear of the tool, all of the knives should be perfectly level, and seated at the correct height, and protruding through the back of the dieboard. *See below.*



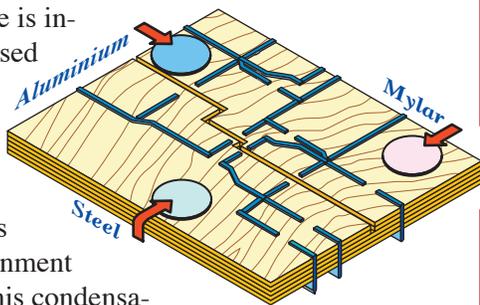
An alternative method of achieving the same result, the rules protruding through the back of the dieboard, is to temporarily attach spacers made from various materials to

the rear of the dieboard. *See below.*

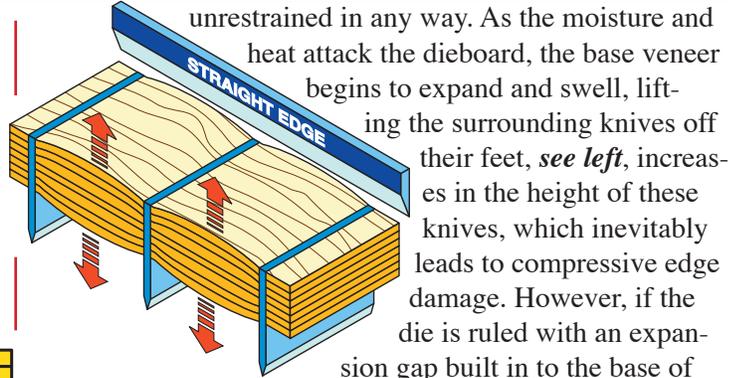
Why is this practice so important?

Why Rules Should Protrude?

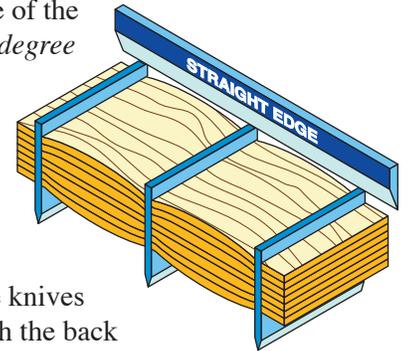
When a steel rule die is inserted into the enclosed area of the press platen well, it is subjected to high levels of heat and moisture. It becomes similar to the environment of a greenhouse. (This condensation generates the rust, which is always a problem on platen stack components.)



Plywood is hygroscopic and loves heat and moisture. However, under the impact of this environment the performance of the dieboard will be undermined. Although the steel rule in the dieboard stiffens and stabilizes the tool preventing excessive shrinkage or expansion, the height of the dieboard is



unrestrained in any way. As the moisture and heat attack the dieboard, the base veneer begins to expand and swell, lifting the surrounding knives off their feet, *see left*, increases in the height of these knives, which inevitably leads to compressive edge damage. However, if the die is ruled with an expansion gap built in to the base of



Summary

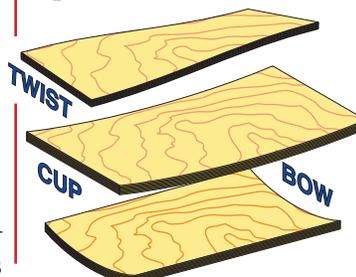
Ruling a dieboard with the knives and creasing rule level with the back of the dieboard is a serious mistake, which undermines press performance on a daily basis. If you ask any diecutter they provide ample evidence of this problem. After making the press ready, and stabilizing the cutting impression, the press begins production. But after a while some knives begin to fail and require patch-up adjustment. What happened?

Most accept this as inevitable, however, the reality is the dieboard has begun to swell under the impact of heat in the platen well of the press. By making sure every knife protrudes below the lower veneer of the dieboard the performance and the cutting stability of the steel rule die is enhanced significantly.

Why else is so much time lost in patch-up adjustment?

Question: How should dieboards be stored?

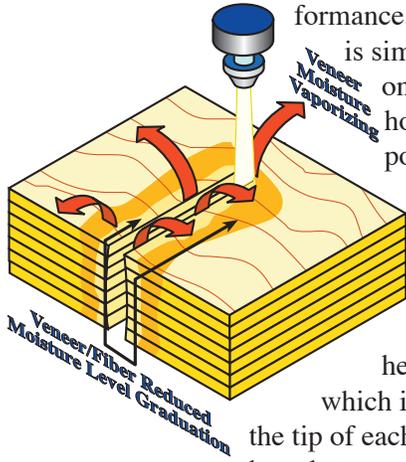
The precise technology used in steel rule diemaking is impressive. However, the accuracy of the finished tool and the degree of converting efficiency are a factor of inherently unstable material, plywood. It is important the diemaker understands how the steel-rule dieboard works and how critical features, impact on-press cutting per-





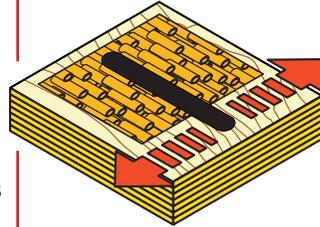
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"All knowledge begins in wonder. All wonder begins with a question." Aristotle

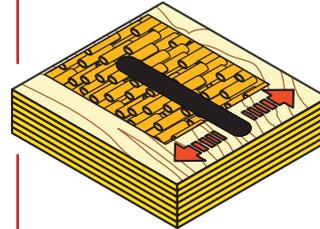


formance. In principle the dieboard is simply a toolholder. It has one purpose and that is to hold the steel rule knife in position to stamp a shape from a substrate. In platen diecutting and in soft anvil diecutting it is important every knife is seated at the exact same height and there is nothing which interferes with action of the tip of each knife as they penetrate the substrate.

Parallel Cellulose Fiber Orientation to the laser cut slot ensures maximum kerf expansion through moisture loss.



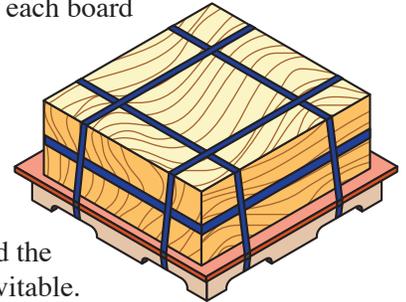
Right Angle Cellulose Fiber Orientation to the laser cut slot ensures minimum kerf expansion through moisture loss.



Stabilizing the Plywood Panel

To achieve the goal of an effective dieboard the wood must be allowed to "cure" and stabilize with the environment it is stored in. Most organizations purchase plywood in pallets, which are protected with a thin layer of packing and banded together. *See below.*

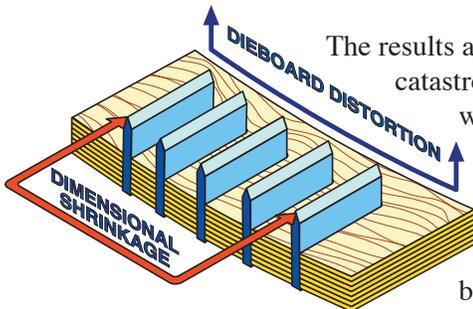
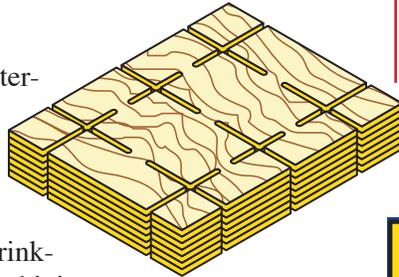
This has the advantage of keeping the dieboards under compressive pressure and minimizing exposure to the varied environments, the result of transportation. However, the problem with this approach is when each pallet is unbanded it is difficult to ascertain if each board is flat or warped.



Further compounding the problem is only the top board is fully exposed to the atmosphere, and even then it is only the sides and the top layer. The result is inevitable.

One of the Achilles Heels of the steel rule diemaking process is the inherent volatility of the plywood dieboard used to fabricate the knife holder or the dieboard. At the beginning of the machining process the dieboard has much higher moisture content than the environment in which it is stored. Using the extreme heat of the laser beam to machine channels and cavities in the plywood panel creates several problems. *See above.*

The first is it exposes the internal cellular structure of the dieboard to the atmosphere, which results in the dieboard rapidly losing moisture, which leads to shrinkage, during and after the machining process. The machining process considerably weakens the plywood panel and the only strength or stiffness of the dieboard is provided by the bridging pattern, which links every panel together. *See above.*



The results are inevitable and catastrophic. The dieboard warps and it shrinks. *See left.* Not only is this a problem before rule processing, it becomes a problem in the ruling sequence

because rapid contraction of the cellular fiber causes the kerf channels to expand. This is more noticeable in any kerf channel parallel to the grain of the top and the bottom layer of the dieboard. *See top of next column.*

If your diecutting discipline is not performing up to it's potential or up to your expectations ... you need a ...

DieInfo Converting Evaluation Program

This service provides an in-depth evaluation of the strengths & weaknesses of the current system of diecutting manufacturing, and it provides a detailed, step-by-step plan of action, designed to drive rapid productive change.

OK, so sometimes you feel you are on life support! But the majority of organizations are sound, they are simply out of touch with up-to-date methods and more efficient practices.

WHY STRUGGLE ... when in two or three days ... you can be on the path to productive health?

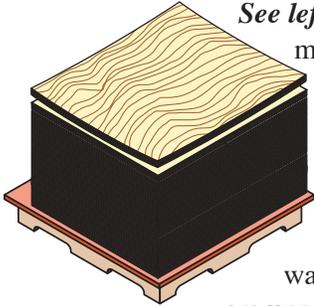
Call 1-909-337-6589 for details





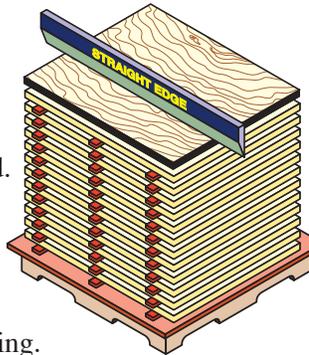
The ABC's of Diemaking & Diecutting

"Education is not filling the bucket but lighting a fire." William Butler Yeats



See left. A storage method practiced by many diemakers is to unpack each pallet and stack the dieboards with spacers in storage racks. See below. This has several advantages:

The first is clearly any badly warped boards are identified as they are unpacked, and these can be sent back immediately for a credit. The second is the air can now flow through each stack to cure and gradually reduce the moisture content of each board. See below. The consistent use of the spacers ensures the dieboard are held under restraint, which when combined with the curing process, significantly reduce warping.



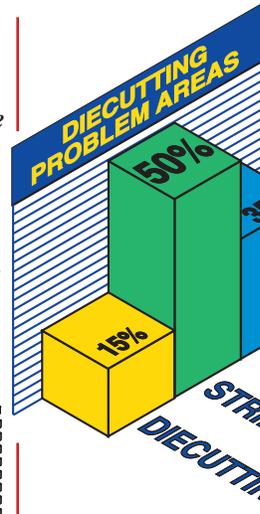
Summary

This is a highly effective method of storing plywood material, as it is a visual system, with no surprises. This method is effective in curing the board to balance the moisture content of the plywood with the environment in the operation. There is greater machining consistency, throughout each board, and from board to board. There is faster more precise laser cutting and the resulting tool is much less likely to warp, cup, or twist.

If you have not tried this storage method, experiment and compare results with the current system of plywood panel management.

A Multi-Height, Two-Step Approach to Platen Stripping

In high-speed diecutting, as the name suggests the goal is to maximize press speed and yield, to minimize waste and down time, and to optimize the productive capability of the diecutting system of manufacturing. It is important to remember however, that diecutting is a manufacturing process in which several different functions are integrated. These are Sheet Feeding & Input, Sheet Management & Registration, Diecutting, Stripping, and often Blanking. Of these func-

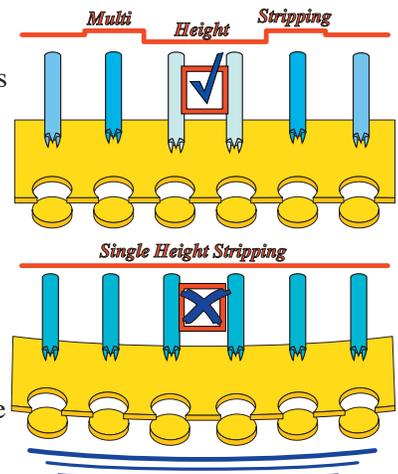


tions the simplest is diecutting and the most complex is stripping and blanking. In fact if you conduct a statistical analysis of down time on a standard sheet fed press the stripping section is the primary source of sheet break-up and problems. See left.

This illustrates that the standard male and female tooling designed to separate product and waste are ineffective and are the source of excess press downtime. In reality there are two key problems with the current design and fabrication of stripping tools. The first is the tools are made with all the male blocks, pins,

and stripping tools at a single height, which causes many different problems. The solution is to move to multi-height stripping, see right, which will improve stripping performance, while it lowers sheet stress and break-up.

The second problem is the standard stripper is a single action stripper which is designed for the perfect world! However, reality again suggests no matter how well the tools area designed, fabricated and installed into the press, the problems of hinging, trap-dooring, pivoting, twisting and flexing, continuously undermine the performance of even the best stripping tool. See below.



STRIPPING PROBLEMS

HINGE 	TRAPDOOR
PIVOT 	TWIST

The solution is to design and fabricate a stripping tool, which incorporates two levels of stripping shearing. If you don't get it the first time, the part has only a limited space to hinge or to pivot, and the second flexible layer will make sure it is completely and





The ABC's of Diemaking & Diecutting

"Don't tell me how hard you work. Tell me how much you get done." James Ling

cleanly sheared free in the second pass. *See right.* Using Multi-Height Male Pin and Multi-Level Female Cavity Stripping are two techniques which provide significant performance advantages individually, and are virtually fail safe when combined together.

These two stripping design techniques are fundamental to productive, trouble free stripping. Let us examine the benefits of multi-height stripping.

Multi-Height Stripping Benefits

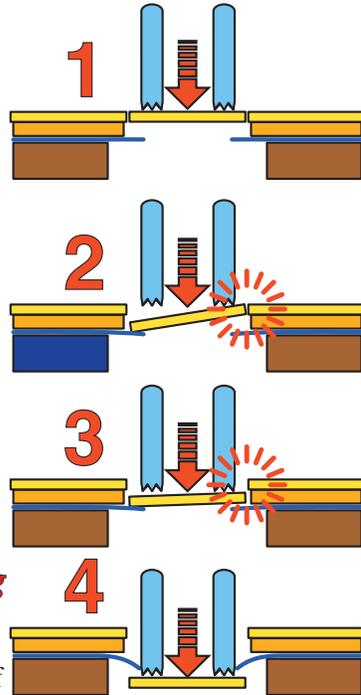
The use of multiple heights of male pins, blocks, and components deliver ten important advantages to the professional diecutter. These are:

- ❁ *Reduced Diecut Sheet /Tooling Pressure & Stress*
- ❁ *Improved Stripping Efficiency & Performance*
- ❁ *Reduced Sheet Tensile Stress and Sheet Break-up*
- ❁ *Faster Press Speed*
- ❁ *Greater Yield with Less Waste*
- ❁ *Fewer & Smaller Nick/Tags*
- ❁ *Eliminate Bottom Pins*
- ❁ *Greater range of Material & Shapes*
- ❁ *Eliminate Key Stripping Problems*
- ❁ *Reduced Cost & Complexity of Tooling*

Summary

Although some will see the multi-height male stripping tool and the combination of two level flexi-stripping as a complication, the results and success offered by this method are difficult to ignore. When you add the reduction in sheet break-up, to the reduction in press down time, the savings in normally wasted material, and the elimination of bottom pins, this system of stripping is extraordinarily successful.

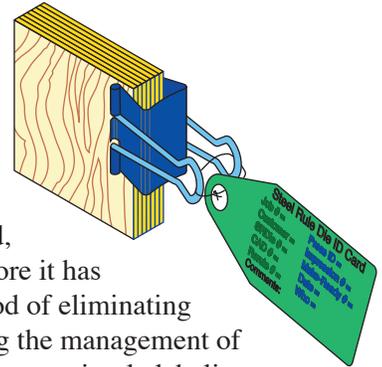
The bottom line is also stark. Those current methods and approaches to stripping are proven to fail every day through slow press speed and poor press yield. If you have not tried either of these simple but highly effective techniques you



are missing an important opportunity to add value to the male and female stripping tool, to increase press productivity, and to reduce the complexity of a key discipline of productive diecutting.

Labeling Steel Rule Dies to Improve Inventory Management

Each steel rule die or tool is critical to the converting process, however, as soon as the pressure of meeting a diecutting deadline has passed there is a danger of the tool being ignored, miss-managed or stored before it has been examined. One method of eliminating this danger and of improving the management of all steel rule dies is to introduce a simple labeling system.



The labels would be simple paperboard tags, which are temporarily attached to the steel rule die using a simple fastener, found in most office supply stores. *See above.*

The Steel Rule Die Information Label



To assist in a fast visual check, particularly for those dies store in racks, the tags are color coded for simplicity. This color-coding could be as follows. A green tag, to indicate the die is ready and approved for production. An orange tag, to show the tool has to be inspected. A black tag, to indicate the dieboard has finished it's useful life and should be destroyed. A red tag, to indicate the dieboard has to be reworked. A blue tag, to indicate the dieboard is ready to be stored. And a yellow tag, to indicate the dieboard has to be reworked by an external supplier or company. *See left.*

To further enhance the use of this system one side of the tag could contain basic information to be filled in by the various tool users. *See right.*

Summary

Using a visual labeling system to indicate a tool requires a specific action not only simplifies tool management it makes life much easier for everyone involved.

Steel Rule Die ID Card	
Job # =	Press ID =
Customer # =	Impression # =
SRDie # =	Make-Ready # =
CAD # =	Date =
Rerule # =	Who =
Comments:	





A Productive Approach to Pricing

"The real issue is value, not price." Robert T. Lindgren

If you have worked in the Diemaking Industry for long enough you will have experienced the radical changes in pricing methods.

In the beginning the diemaker would simply make the die to the customer specification. The materials cost what they cost, the time was charged as it was recorded, and the profit percentage the diemaker used was added to the total to generate the price. This was the first of the three pricing systems employed, and was simply **Time & Materials Pricing**. See below.

Time & Materials Pricing

COST + PROFIT = PRICE

Market Driven Pricing

PRICE - COST = PROFIT

Productivity Driven Pricing

PRICE - PROFIT = COST

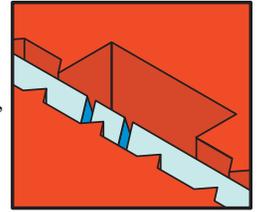
However, as competition increased and the customer became more knowledgeable, the balance of power shifted to the customer as they began to dictate the price they would pay for a specific tool. This is **Market Driven Pricing**, and the disadvantage to the commercial diemaker, is their profit margin was now determined by subtracting costs from the price established by market forces. There are obviously severe penalties for poor purchasing and inventory management practices, and for processing inefficiency.

Fortunately, there is a third approach, which while it does not change the Market Driven Price environment, it provides the commercial diemaker with a benchmark to drive productive improvement. This approach is called **Productivity Driven Pricing**.

In this approach the market established the price as before, but now the diemaker calculates the profit margin, which is subtracted from the market price to give the operation a cost target they must meet or they must use as a benchmark for productive improvement. And remember this Philip Armour quotation; "Anybody can cut prices, but it takes brains to make a better article."

WaterJet Profile Rubber Inserts

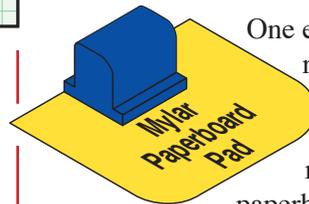
WaterJet cut ejection has demonstrated an ability to increase press productivity; while reducing press down time and diecut sheet break-up. This is accomplished because it provides far more effective grip-to-back-edge clamping. It significantly reduces the need for nicks. It eliminates the compression of air in die cavities. It keeps the material flat and under stable tension during diecutting. It provides a pressure balancing element which makes setting and maintaining a consistent cutting impression simpler and easier. And it protects the steel rule die knives from rapid compressive damage.



Although the need for nicks is reduced, because of overall layout comprehensive clamping, there is still a need to add the additional clamping force of Profile Rubber to nicks in the steel rule knife.

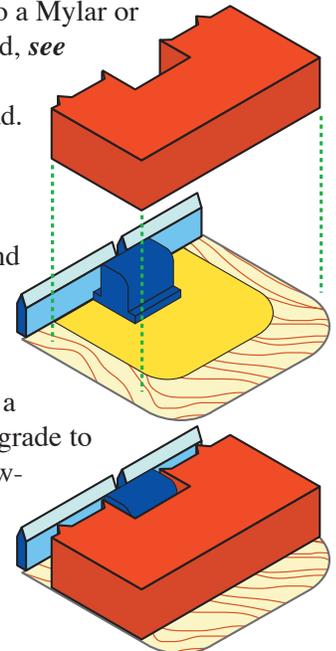
Profile Rubber

The advantage of the WaterJet cutting process is an aperture can be positioned in the shape to accommodate strips of Profile Rubber. See above. This has several advantages including the elimination of Superglue, the consistency and simplicity of positioning, the speed of installation, and the integration of nicks and rubber using the CAD system.



One effective method of being able to remove the profile rubber from the dieboard to add more nicks to the knife, is to Superglue the profile rubber to a Mylar or paperboard pad, see

above, and to tack glue that pad under the WaterJet cut rubber pad. See right. This is far better than trying to pry the rubber loose or making the mistake of grinding additional nicks into the knife and the rubber.



Summary

WaterJet cut ejection material is a revolutionary and productive upgrade to diemaking and to diecutting, however, it is important to integrate materials and techniques, which have proved effective in the past.