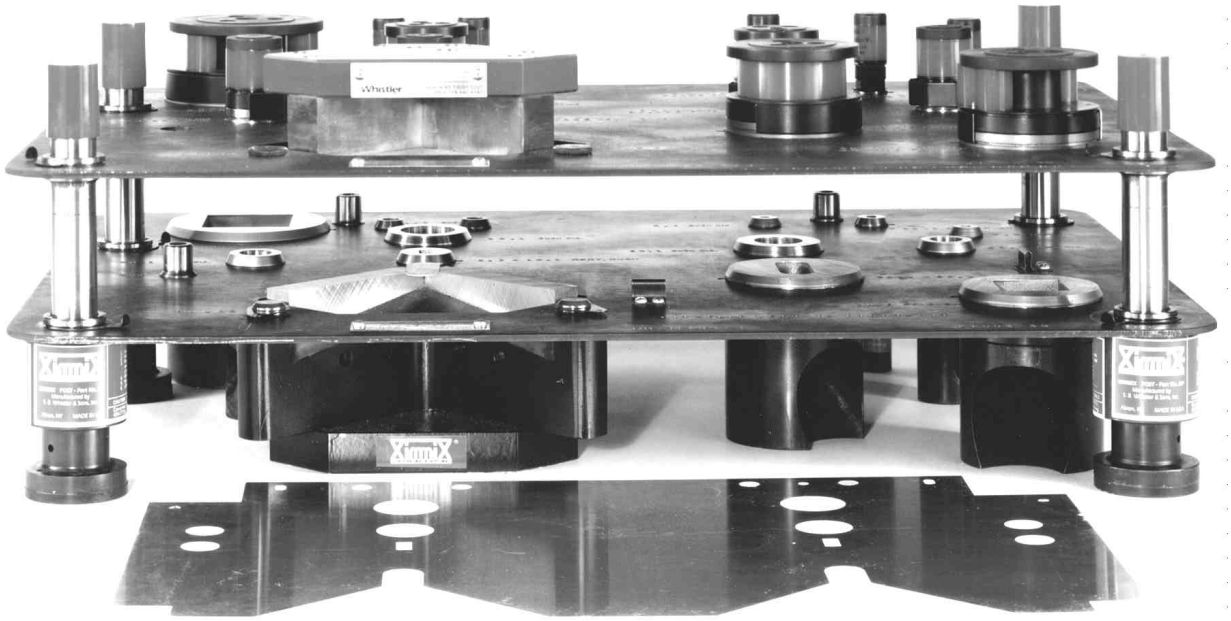
XimmiX®
USER'S MANUAL



This user's manual is intended to guide users of the XimmiX® Modular Hard Die punching and notching system manufactured by S.B. Whistler & Sons, Inc. of Akron, NY 14001 USA.

For further information, or to place an order, contact our sales department at:

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CONTENTS

WARNING

TO PREVENT SERIOUS BODILY INJURY

NEVER PLACE ANY PART OF YOUR BODY UNDER THE SLIDE (RAM) OR WITHIN THE DIE AREA UNLESS POWER IS OFF, FLYWHEEL IS STOPPED AND THE SLIDE (RAM) IS BLOCKED UP.

NEVER OPERATE, INSTALL DIES, OR MAINTAIN THE PRESS WITHOUT PROPER INSTRUCTION AND WITHOUT FIRST READING AND UNDERSTANDING THE OPERATORS MANUAL AND PRESS MANUAL.

IT IS THE EMPLOYER'S RESPONSIBILITY TO IMPLEMENT THE ABOVE & ALSO TO PROVIDE PROPER DIES, GUARDS, DEVICES OR MEANS THAT MAY BE NECESSARY OR REQUIRED FOR ANY PARTICULAR USE, OPERATION, SET UP OR SERVICE.

This manual has been written to instruct personnel in the operation and maintance of the XimmiX Modular Hard Die System. Product design, dimensions and tolerances are subject to change without notice.

NOTE: IF THE EMPLOYEE DOES NOT READ OR UNDERSTAND ENGLISH, IT IS THE EMPLOYER'S RESPONSIBILITY TO INTERPRET AND EXPLAIN ALL WARNING SIGNS, ALL INFORMATION CONTAINED IN THIS MANUAL, THE POWER PRESS SAFETY OR ANYTHING PERTAINING TO THE CARE AND USE OF SUCH PRODUCTS.

SECTION "A"- INTRODUCTION

This manual will assist the reader in understanding and properly implementing the XimmiX® Modular Hard Die System.

XimmiX is entirely developed and patented by S. B. Whistler & Sons and incorporates several innovations. XimmiX is a technical evolution of our two earlier die system product lines known world-wide as Adjustable Modular Hard Die and Magna Die® Modular Hard Die Systems.

XimmiX is designed as an efficient, productive tool for punching and notching flat sheet metal in conventional stamping presses and press brakes. Maximum system capacity is 10 gage mild steel. Components are interchangeable and reuseable. Features you will appreciate are

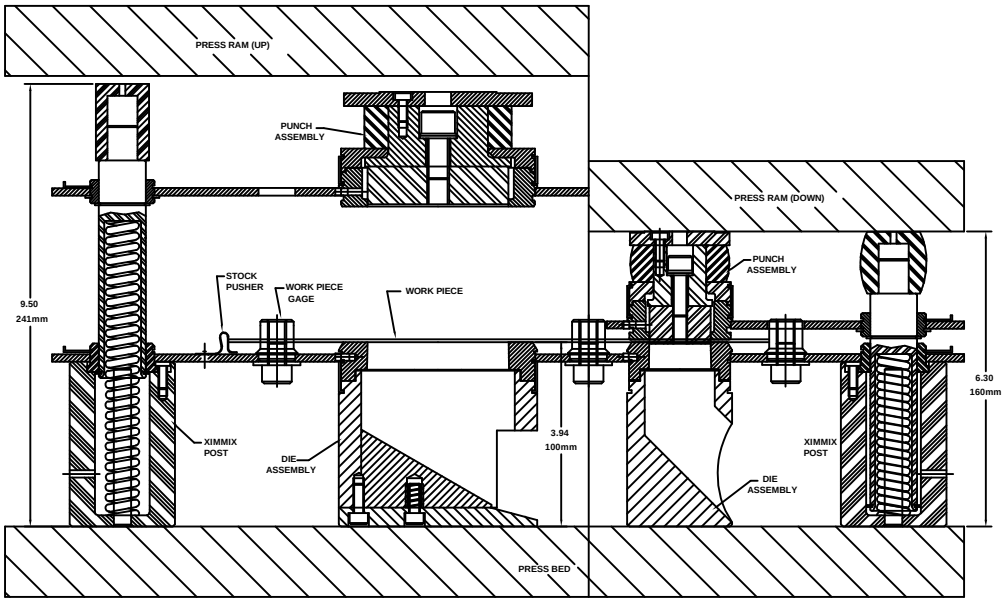
- high quality tool steel components
- self-contained, bump style design
- close center tool units
- high accuracy
- reversible punches
- light weight tooling
- simple set up
- fast tool changes
- complete factory services and support

The system consists of two identically matched, 8 gage steel templates. One template positions the punch tooling, the other positions the die tooling. Tool units lock into the templates.

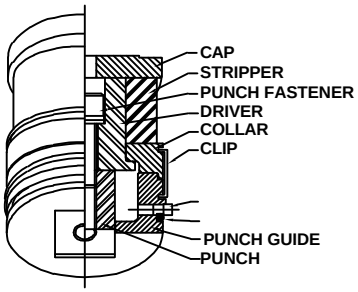
The upper (punch) template and the lower (die) template assemble together with spring loaded precision alignment posts. The posts hold and align the assembly and insure that the punch and die templates are kept in precise vertical alignment with each other during the press cycle.

The posts return the punch template assembly to an open position at top of the press stroke, to facilitate loading and removing of the workpiece. Since XimmiX operates like a "bump" die, there is no press ram attachment.

The sectional view below illustrates XimmiX tooling in both the open (top of stroke) condition, and at shut height (For clarity, page 3 provides a larger view of this detail).



A major design feature of XimmiX is the construction of the punch assembly. Punches are located at the punch point by the guide. XimmiX guides are stripper plates and are precision fitted to each punch point. Guides are precisely located in the upper (punch) template, which defines the plane of the punch points.

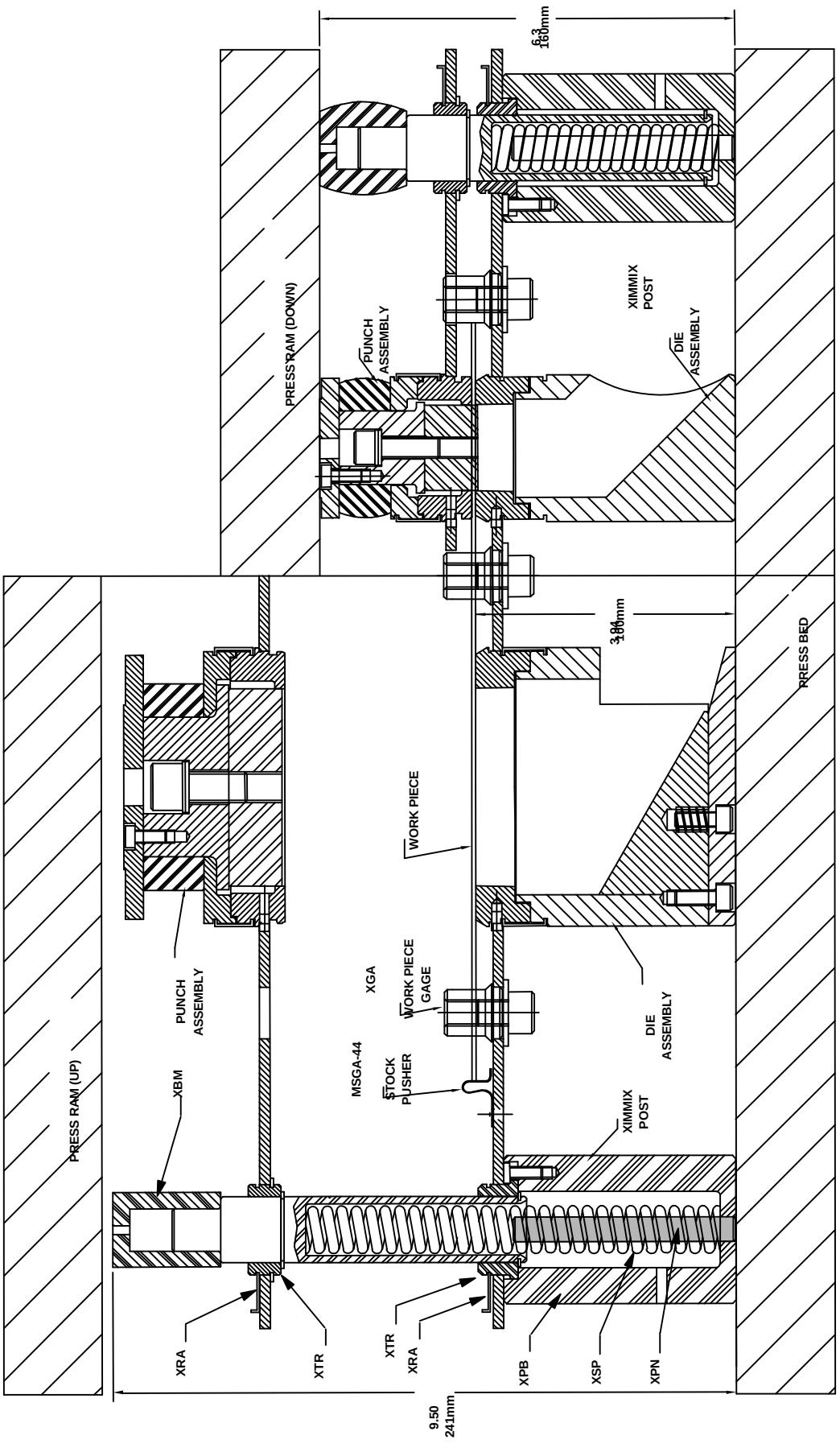


It is this design concept that insures the accuracy of XimmiX dies. The precision of the templates is transferred to the workpiece. This unique design also eliminates the need for a punch body that must be concentric to the punch point. Without a punch body, most XimmiX punches can be made reversible.

The die pod assembly in the die (lower) template is concentric to the punch assembly located within the corresponding bore in the punch template. Template bores are identical since the templates are machined while clamped together in sets of (2) pieces.

XimmiX is metric in design and is user friendly. Tool holder designations reflect this. For example, the smallest standard tool holder is the TH10. The largest punch that can be used in this tool holder is 10mm (.394"). The largest standard tool holder is the TH80, for punches up to 80mm (3.150"). Other standard tool holder sizes within the XimmiX system are 12, 20, 35 and 55mm. If you have an application where one of the standard sizes will not be sufficient, Whistler can build Sub Press Die units that can be incorporated into your system.

Whistler offers assistance and services to help make your use of XimmiX punching and notching equipment easy, enjoyable and financially rewarding. We thank you for giving Whistler the opportunity to help you.


6.3
160mm
PRESS RAM (DOWN)
PUNCH ASSEMBLY
XIMMIX POST
DIE ASSEMBLY
3.80
100mm
PRESS BED
WORK PIECE
PUNCH ASSEMBLY
XGA
WORK PIECE GAGE
MSGA-44
STOCK PUSHER
DIE ASSEMBLY
PRESS RAM (UP)
XBM
XIMMIX POST
XRA
XTR
XTR
XRA
XPB
XSP
XPN
9.50
241mm

SECTION "B"- RECEIVING THE ORDER

When you receive your shipment, it is important to review the whole order to make sure that all the parts of the XimmiX system you ordered are accounted for. It is also important to understand how to identify each individual component and how all the pieces fit together. Following are basic illustrations of the XimmiX components and how they are identified on the packing list. (additional information can be found in the reorder guide).

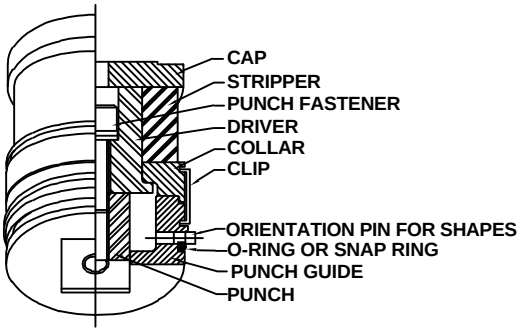
P O NUMBER	CUSTOMER	SHIP VIA	REQ.DATE	TERMS
9814459-1	VENT2	TRUCK	02/12/99	1% 15 NET 30

SALESPERSON	WH
16	1

LN#	ORDER QTY	SHIP QTY	B/O QTY	ITEM NO. & TYPE	DESCRIPTION	BIN	MFG
1	1			0440 07	SET XIMMIX PUNCH/DIE TEMPLET 1 OF 1-REF NO 81539-2, REWORK TO LATEST REVISION, P/N 37092		MX
2	1			0399 07	B35 BUSH ANVIL FOR STAMP	1	MX
3	1			0440 07	SET XIMMIX PUNCH/DIE TEMPLET 1 OF 1-REF NO 81539-3, REWORK TO LATEST REVISION, P/N'S 36725 & 36532		MX
4	2			12502 07	TH35 XIM TOOL HOLDER COMPLETE	(KIT)	
	2			12509	PH35 XIM PUNCH HEAD COMPLETE	B18G	
	2			12013	POD35 XIM DIE POD COMPLETE	B18H	
5	1			0387 07	P35 PUNCH CHISELPOINT STMAP: "FRONT SERVE"	1	MX
6	1			0387 07	P35 PUNCH CHISELPOINT STAMP: "REAR SERVE"	1	MX
7	1			0387 07	P35 PUNCH CHISELPOINT STAMP: "SUPPLY"	1	MX
8	2			0394 07	G35 GUIDE 'D'SHAPE TO SUIT STAMP	1	MX
9	2			0399 07	B35 BUSH ANVIL FOR STAMP	1	MX

*** P A C K I N G L I S T ***

PUNCH ASSEMBLY



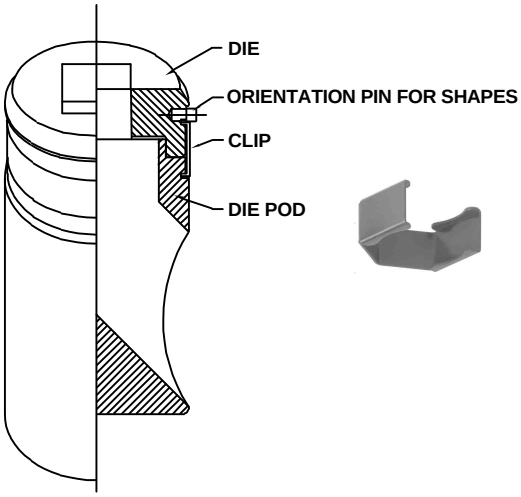
PH20 - PUNCH HEAD (10-80) SERIES

P20D - PUNCH (10-80) SERIES

CLP20 - CLIP (10-80) SERIES

G20D - GUIDE (10-80) SERIES

DIE ASSEMBLY

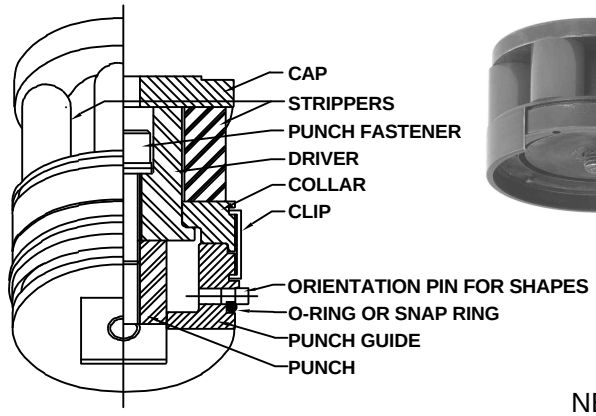


B20D - BUSHING (DIE) (10-80) SERIES

POD20 - DIE POD (10-80) SERIES

For a full listing of each component and reorder details, see the XimmiX Reorder Guide.

PUNCH ASSEMBLY FOR NOTCHING



NH55 NOTCH HEAD (55 & 80) SERIES

CAUTION

NEVER dry cycle the system, especially with corner notch tools and edge piercing.

SECTION "C"- PRESS REQUIREMENTS

The Whistler XimmiX Modular Hard System is intended for use in conventional machine tool stamping and forming presses, either mechanically or hydraulically driven. Typical press styles used are: OBS, OBI, Gap Frame, Straight Side and Press Brake. Other types of machines, such as air powered and the so called "platten press" may be applicable, but should be carefully reviewed with the manufacturer for specific applications.

XimmiX requires a press of sufficient punching tonnage, equipped with working surfaces or filler plates, on both the slide (ram) and the bed which are flat, parallel and free of any openings or depressions which can influence the tooling. Working surfaces should be tough enough to withstand the repeated impact of the punching forces generated by the tool holders. We recommend an AISI 1045 high carbon plate or a similar high strength low alloy.

Required operating shut height between working surfaces is 6.3" (160mm) and we recommend a press with a least a 3" (76mm) stroke or greater for hand feed operations.

It is possible to operate XimmiX in a press with 2" stroke, although you may find it difficult to load the tooling. The XimmiX posts travel a little more than 3", having a 9.5" free length. A press with 2" stroke, set for 6.3" shut height, allows for only 8.3" open height at top of stroke. In order to install a XimmiX setup, you must either compress the XimmiX posts 1-1/4" (with some difficulty) or change your ram adjustment for loading only. On request, Whistler will modify post springs to suit shorter strokes.

Filler plates should be equal in size to the largest overall XimmiX template set to be run. If the filler plates extend beyond the bed, bolster or slide face, the unsupported area should not be greater than the filler plate thickness.

If the unsupported area of the filler plate is greater than the plate thickness, then supporting brackets, adapters, or other means of support should be added to prevent any deflection of the filler plate during maximum expected punching load. Whistler will quote, design and manufacture filler plates for your specific application upon request.

If you are in doubt about calculating tonnage or balancing tonnage load, just ask a Whistler representative about your specific application and we will be happy to assist; or, see page 9 for instructions on how to calculate tonnage.

When calculating press tonnage requirements, remember that press brakes should be considered from 1/2 to 2/3 of rated tonnage for punching. For example, a 100 ton hydraulic press brake should not be used for a punching application which exceeds 50-67 tons of force. The break through shock of punching can damage hydraulic circuits. Be sure to consult with the press manufacturer. Stop blocks or kiss blocks should also be considered when XimmiX is run in a hydraulic or pneumatic press.

Maximum production efficiency is often a result of operator comfort. XimmiX tooling provides approximately 3-1/2" of vertical opening for loading and removal of the workpieces. If a setup is deep front-to-back and the press bed (tool position) is low, the operator may have to bend or stoop to see the gages when loading a part. This will become tiresome with a resultant drop in productivity.

Consider ergonomics, proper lighting and work placement when operating your press. Also, you can consider front gaging, template viewing cutouts and other remedies to the above problems.

Whistler assumes no responsibility beyond the XimmiX tooling itself. Filler plates, feed equipment, installation, safety precautions and proper press equipment, maintenance and care are the responsibility of the customer/user.

SECTION "D"- TEMPLATE DESIGN

Following are guidelines on the designing of a XimmiX template set. There are many ways and opinions on how to design templates. Depending on customer requirements, job complexity and delivery demands, templates can be designed to produce parts in (1) setup, (1) hit, or in multiple setups, with multiple hits. Templates can also be designed for production from strip stock or even from coil material.

XimmiX template design involves the following (5) steps:

Step 1 Determine the number of hits and setups to complete a part.
Step 2 Determine locations of tool components to produce the part.
Step 3 Determine the quantity and location of gages, pushers, pilots, support buttons and XimmiX posts.
Step 4 Determine the overall template size sufficient for steps 1-3.
Step 5 Verify press support area and material flow for template size.
Step 6 Produce coordinate data and other information needed for template manufacture.

If you have questions about designing XimmiX templates, please consult our Engineering Department. They will be happy to review the project with you and help determine the best way to punch and notch your product.

The last page of this manual is a transparent overlay with XimmiX tooling outlines in full scale. It can be removed and used to assist you in Steps #1-3. Whistler also offers a DXF disk that will help in the design of your own templates (see page11).

CALCULATING DIE CLEARANCE: Die clearance is related to the thickness and type of material being punched. For mild steel (AISI 1010/1020) we recommend a total of 10% of material thickness (5% each side) added to the punch size. Clearance should be doubled for stainless steels. Use a total of 8% for light gage softer materials, like aluminum or copper.

Example: To punch a .500" (12.7mm) diameter hole in 11 gage (.120") mild steel, the die size will be .512" (13mm). (10% X .120= .012 + .500= .512).

To determine the size of the guide, add .001 to the size of the punch.

CALCULATING TONNAGE:

To calculate punching tonnages use the following shear strength value chart with either the Inch or Metric formulas.
To ensure safe operation, it is recomended that any questionable tonnage conditions be reviewed thoroughly with your press manufacturer.

Shear Strength Values

MATERIAL	TONS PER SQ INCH	METRIC TONS PER SQ CM
Aluminum 1100-0 3003-0,6061-0	5.0	0.71
Aluminum 2024-0 3004-H36, 5052-H32	10.0	1.41
Brass & Aluminum 2025-T6, 6152-T6	17.5	2.46
Mild Steel & Bronze	27.5	3.87
Stainless Steel	55.0	7.74

Formula - Inches
Linear inches X Material thickness in inches X Tons per square inch = Tonnage Required

Formula - Metric
Linear centimeters X Material thickness in centimeters X Metric tons per square centimeters = Metric Tonnage Required

NOTE: Add an additional 10% for stripping pressure (multiply by 1.1).

EXAMPLE: How many tons are required to punch fifteen 0.375" (9.52 mm) diameter hole in 16 gage 0.06" (1.52 mm) mild steel ?

Inch
Using the formula of Circumference = 3.1416 X Diameter, determine the linear inches of one 0.375" diameter hole (0.375 X 3.1416 = 1.178"). Multiply by 15 to calculate total linear inches (15 X 1.178 = 17.672"). Select the proper Shear Strength value from the above chart (Mild Steel = 27.5 tons per square inch) and calculate the total tonnage using the below formula.

17.672" X 0.06" X 27.5 = 29.2 Total Tons
Add 10% for Stripping pressure
29.2 X 1.1 = 32.1 Tons

Metric
Using the formula of Circumference = 3.1416 X Diameter, determine the linear centimeters of one 9.52 mm diameter hole (9.52 X 3.1416 = 29.91 mm, or 2.99 cm). Multiply by 15 to calculate total linear centimeters
(15 X 2.99 = 44.85 cm). Select the proper Shear Strength value from the above chart (Mild Steel = 3.87
metric tons per square centimeters) and calculate the total tonnage using the below formula.

44.85 cm X .152 cm X 3.87 = 26.38 Metric Tons
Add 10% for Stripping pressure
26.38 X 1.1 = 29.0 Metric Tons

SECTION "E"- TEMPLATE MATERIAL

XimmiX templates are manufactured in pairs (2 pieces). One template becomes the punch (upper) template and the other becomes the die (lower) template. The only difference is in the way that they will be stamped with setup information.

The primary function of the templates is to provide the X - Y (i.e. coordinate) location of the various tool components in the setup. The punch template must also support the weight of the punch tooling between the XimmiX posts; therefore, it must be adequately rigid.

Template holes are machined to precision diameters and location since vertical alignment of the two templates is critical during operation, template material must remain dimensionally stable within the expected ranges of shop temperature.

It would be simple enough to dismiss anything but steel for XimmiX templates. However, other materials such aluminum, masonite, hardboard and plastics are occasionally used. For general sheet metal stamping, Whistler recommends the use of low carbon steel templates.

Plastics can save on the weight factor, but they can be very expensive, less precise, unavailable in the required thickness, may crack and are more difficult to mark with the required information.

Whatever material you choose, its coefficient of thermal expansion and rigidity (modulus of elasticity) must be considered relative to the positioning and weight bearing functions described above.

The template thickness specification for XimmiX templates is .154"/.162" (3.91/4.11mm). The standard Whistler template stock is AISI 1008, 8 gage hot rolled, pickled and oiled (HRP&O) steel. Mill sheets are stress releived to produce very flat sheets. After the leveling process, the sheets are then sheared to final size.

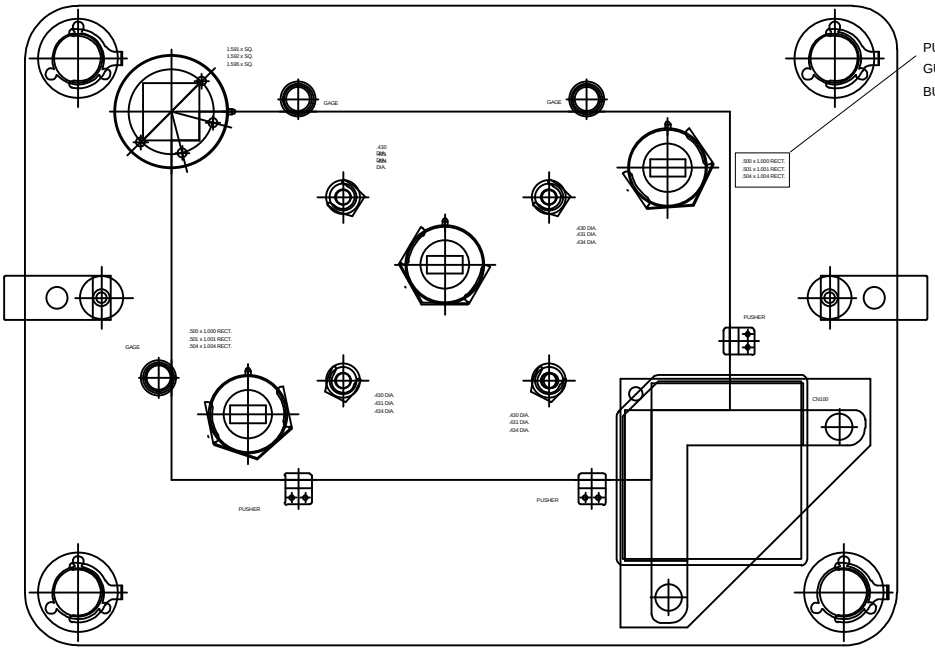
The steel mill hot rolling process sets up stresses in the steel's micro structure. Steel material used for XimmiX templates which has not gone through the leveling process may "kink", "oil can" or warp out of flatness, when numerous holes are subsequently machined into it. Leveling the steel to the elastic limit relieves stress, insuring that the finished templates remain dead flat and dimensionally true.

Templates that are not flat can cause misalignment of punches and dies, which will shorten tool life. In addition, a warped template may elevate die pods, allowing slugs underneath. This may cause damage not only to the XimmiX system, but may cause damage to the press itself.

SECTION "F"- TEMPLATE MANUFACTURING

There is no one best method for machining templates. Templates are a major component of the XimmiX system and it is critical that the templates be correct. We recommend that Whistler make the first set of templates for you. This is important because it gives you, the user, a chance to see what the templates should look like, how Whistler identifies and finishes each specific hole, and permits Whistler to warrantee the final product.

If you would like to make your own templates, Whistler will be more than happy to work with you. Just give Whistler a call and we will assist you in any way possible. From advice on how to machine the templates, doing actual layouts or utilizing the DXF disk to aid in design and manufacturing, we can help.



CAUTIONS:

1) VERIFY SLUG CHUTEORIENTATION FOR ADEQUATE SCRAP DISCHARGE AREA

2) CHECK JOB TONNAGE VERSUS PRESS CAPACITY

3) DESIGN LAYOUT FOR BALANCED TONNAGE LOAD

4) NU55 OR NU80 SHOULD BE SPECIFIED FOR NOTCHING APPLICATIONS

5) CONTACT WHISTLER FOR ADDITIONAL DESIGN DATA ON COIL OR STRIP-FEED APPLICATIONS

6) MULTIPLE STATION APPLICATIONS SHOULD BE GAGED FROM THE FIRST STATION EDGES -XLPG-50 PILOTS CAN ALSO BE USED IF PREFERRED FOR SECONDARY HITS

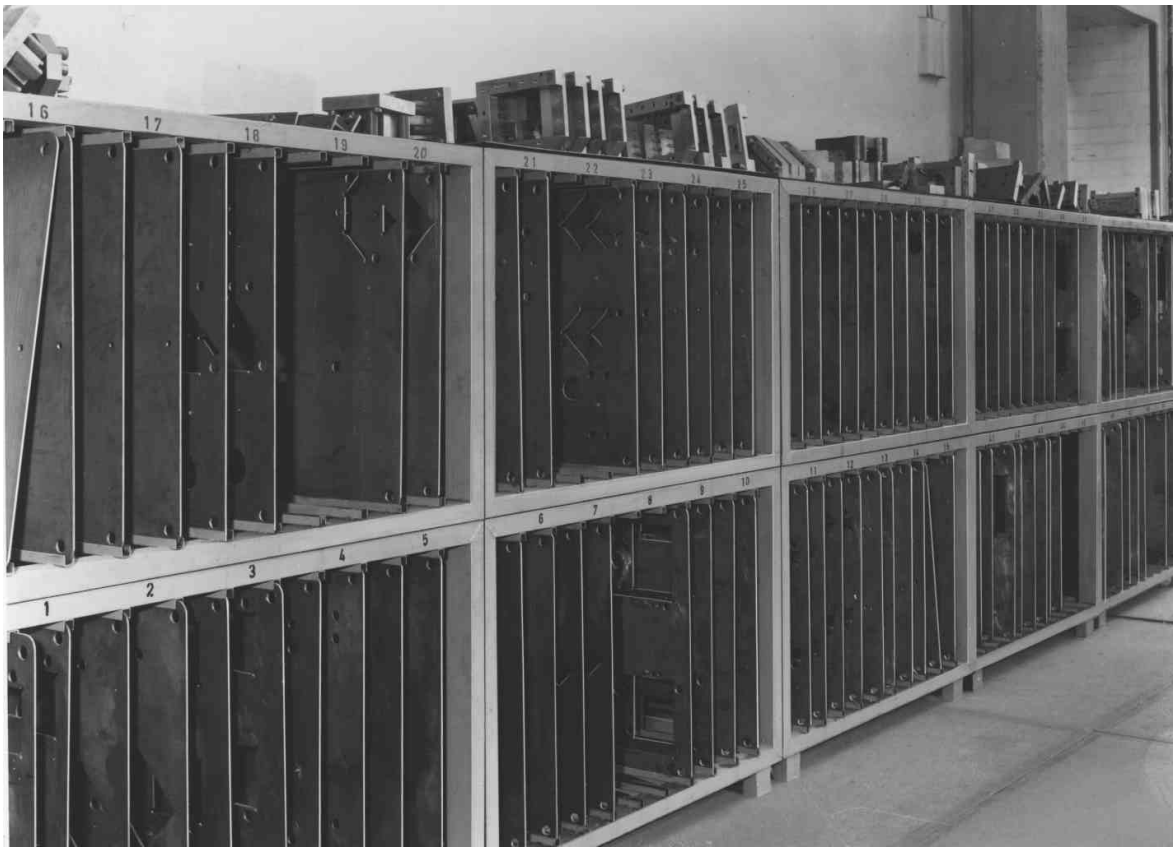
SECTION "G"- SET-UP

Work and Storage Area

The tool setup area should be kept clean, well lit and well organized. Tool component bins and drawers should be clearly labeled for efficient location of tools. Steel tool storage cabinetry is the proper way to keep tooling and is readily available from several sources.

XimmiX templates can be stored in open racks or shelves with vertical slots (angle iron works well) which will support the templates, standing on edge vertically. Store templates as a matched pair in tool number sequence. The photo below provides a general idea for storage planning. When not in use, all tools and templates should be lightly oiled to prevent rust.

Additionally, a horizontal surface for setting templates while loading tools is a must. A table top of wood, plastic or metal will work adequately.

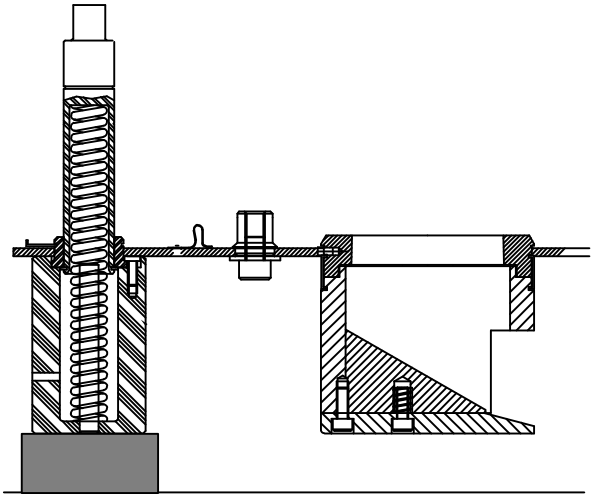


The best way to assemble XimmiX tooling for a production run is to first gather all required tools for the job at hand. A Bill of Materials or Tool Sheet may be very useful for this.

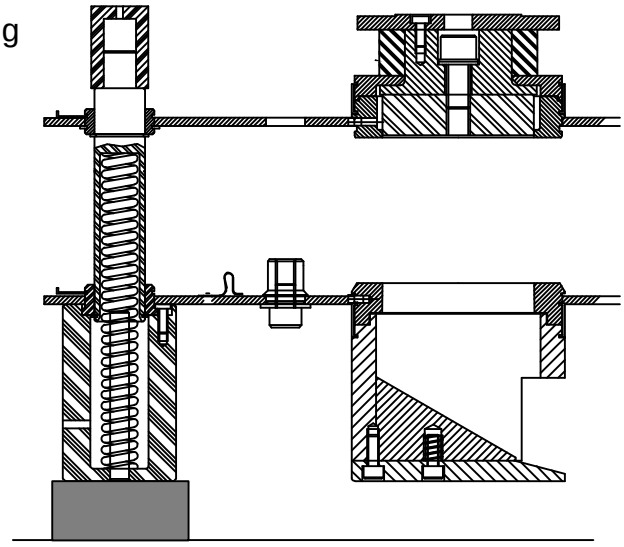
You might want to consider a setup table 34"-40" high with wheels. Setups can then be wheeled to the press for convenient loading and unloading of the XimmiX system.

The following tools, available from Whistler, will be useful when setting up:

-set of metric hex wrenches
-small flat screw driver (for clip removal)
-emery cloth
-rubber, plastic, leather or brass mallet
-pliers
-bench vise with soft jaws
-liquid thread locking compound



BASIC SET-UP: From listening to the advise of our current XimmiX users, we have come up with a primary recommendation for setting up a XimmiX system (this is only a recommondation. You may come up with another system. In any event, use a system that works best for you). The first step is to take the XimmiX posts, remove the red polyurethane bumpers and load the posts into the lower (die) template. After all the posts are loaded into the die template, take small blocks of equal size and place them under all the posts. These blocks should be at least 1" high and should not be much bigger than the base of the posts. By elevating the system, you will be able to use (2) hands when loading tooling into the die template.



DIE TEMPLATE: Start with the interior holes and work outward. Place each bushing into the appropriate template hole. Whistler stamps template information on the top of the die template. Die bushings are loaded from the top. Be sure each bushing is positioned all the way into the bore so that it stops against the shoulder. Bore fits can be very tight, especially in new templates. The use of emery cloth on the template bore, along with a soft mallet, can facilitate a stubborn fit. Now position the die pod underneath and against the bottom of the bushing and secure with the appropriate clip.

NOTE: Be certain that the clips are fully and properly engaged into both the groove in the bushing and in the groove in the die pod.

Continue until all template holes for the part to be produced, are loaded with the proper tools. When done, double check all sizes. The bushing size etched on each bushing must match the size stamped into the template for that bore.

Rotate die pods so that all slug chutes are oriented away from the operator and provide a clear slug path for scrap.

PUNCH TEMPLATE: Before loading the punch template, assemble all round punches to the punch holder. It is important that the punches are screwed on tightly. A vise with soft jaws can be used to hold the punch during tightening. For shaped punches, screw the punch onto the punch holder, DO NOT tighten until you place the guide on the punch. After the guide has been placed over the punch, proceed by tightening down on the punch. We recommend an application of a liquid thread locking compound intended for easy removal to be placed on the punch holding portion of the threads for all punches to prevent loosening of punches during operation.

After you have the punches tightened, it is now time to take the punch (upper) template and load the template onto the posts that are already loaded in the die template. Using the template rings, carefully lower the punch template onto the posts. There should be no tools loaded in the punch template at this time . After the punch template is in place, begin taking the punch/guide assemblies and start loading them into their respective holes that are stamped on the top of the punch template.

As with the die template, work from the center outward. Place each guide/punch assembly into the corresponding template bore, just as you would a bushing. Whistler stamps the top side of the punch templates, so all punch/guide assemblies are loaded from the top.

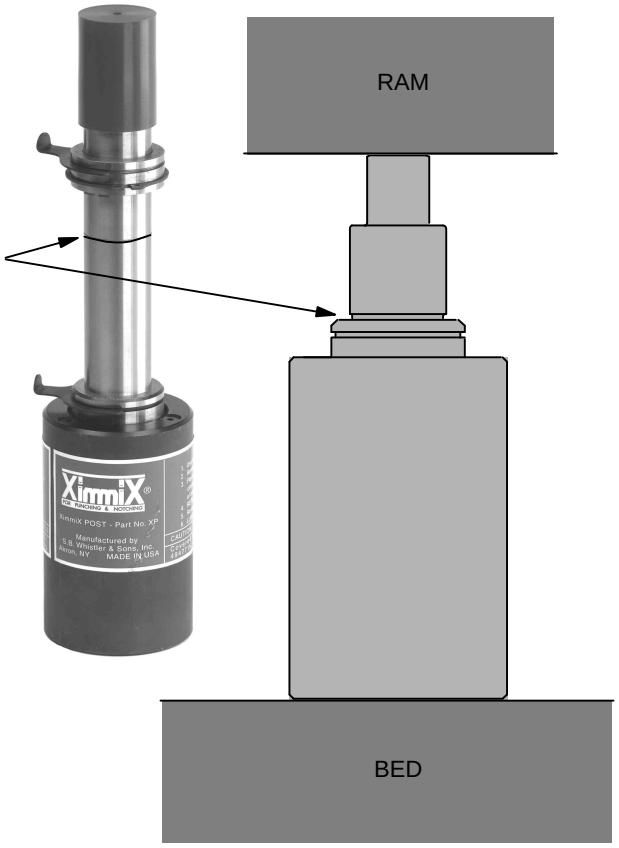
NOTE: Be absolutely certain that the clips are fully and properly engaged into both the groove in the guide and the groove in the collar of the punch head. Improper clip location can result in disassembly of the punching unit and the guide during punching operation. Double check all clips. Be sure the guide "O" ring is all the way through the template bore to secure the punch/guide assembly to the underside of the punch template. If steel retaining clips are used in place of the "O" rings, be sure that they are properly fitted into the groove in the guide. A slight film of oil on the "O" ring can ease insertion and removal from the punch template assembly.

SECTION "H"- OPERATION

SETTING SHUT HEIGHT: XimmiX operates at 6.3" (160mm) shut height for proper operation. We have incorporated in the XimmiX post design a reference tool to help establish shut height.

Follow these steps:

1) Read the instructions on the XimmiX post label.
2) Make sure that the shut height of the press is greater than 6.3" with a scale before proceeding.
3) Remove one XimmiX post from the setup, (notice the machined site line on the post pin OD)
4) Remove the red polyurethane bumper.
5) Place post upright on press bed
6) Bring press down to bottom of stroke
7) Using the slide adjustment on the press, lower ram until the site line on post pin is level with the top of the boss on the post body, as shown.
8) Lock the slide adjustment on the press, return to top of stroke and remove the post.
9) Place the post back into the XimmiX setup and place red polyurethane bumper back on the post.



The XimmiX Modular Hard Die is now ready to run. Some final ram adjustments may be necessary to cause all punches to completely perforate. Do not adjust more than .020" (.5mm) at a time. Before punching any workpiece material, we recommend that you place a piece of paper in the setup and adjust the press ram until you perforate the paper. After you have perforated the paper, replace the paper with the part material and cycle the press. If necessary adjust the press ram until the part material has been completely perforated.

CAUTION: Setting the shut height too low can result in damaged tools! This is especially true when running heavy gage material with shouldered style punches. As the punch travels downward through the guide at the bottom of stroke, there is the possibility that the radius of the punch point (where the point "runs out" into the body of the punch) may jam the guide. This can crack the guide with a wedge action when the shut height is set too low. This problem can also occur if you attempt to punch material which exceeds the system's capacity of 10 gage mild steel.

LOADING TOOLS: Most XimmiX setups are lightweight enough for one or two people to lift and manually load into the press. This can make for very rapid changeovers, a major advantage of the XimmiX system.

Occasionally, setups may either be too heavy, or too large to handle manually. In such cases, we recommend the use of a subplate, made of 1/2"-3/4" thick steel, to carry the tool setup. Depending on material being punched, series 7000 aluminum plate can also be used.

The subplate should be ground flat and of uniform thickness. It will allow forklifting of the setup, which can slide from the forks into the press. Since die pods will be sitting directly on the subplate, it must also provide adequate toughness characteristics to withstand punching forces. Otherwise, tool units may become imbedded and tip, and the plate may warp or "dish", due to the continuous pounding. If a subplate is used, BE CERTAIN TO SET THE SHUT HEIGHT TO INCLUDE THE SUBPLATE THICKNESS.

Prior to loading the system, wipe the working surfaces clear of all slugs and any other obstructions which might influence tool squareness. Remove nicks, dents, or high spots on the press bed and ram with a flat file. Also, wipe the bottoms of all the die pods in case slugs or other objects are adhering

CAUTION: Never carry a XimmiX setup by the punch template only! Always handle the setups by the die template, posts or by gripping both the punch and die templates together. Remember that the red poly post bumpers are friction fit and will pull off.

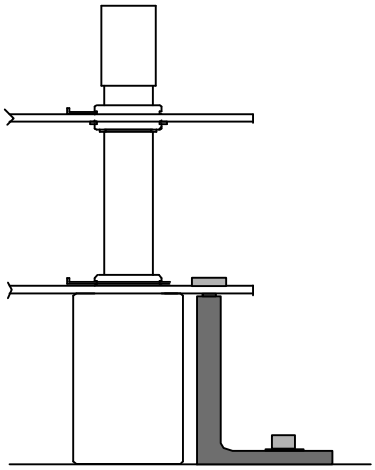
With the press at top of stroke, place the XimmiX setup onto the press bed. Center the tooling under the ram in an attempt to center the press loading.

If your press stroke is 3" or less, the XimmiX setup must be compressed in order for the system to fit into the press. In some cases this can be done manually but usually must be done with special clamps that compress the springs in the XimmiX posts. It may even be necessary to shorten the lifter springs inside the XimmiX post assemblies, in order to fit the XimmiX setup into your press. Whistler will be happy to provide shorter springs, upon request.

Rotate all die pod slug chutes away from the operator of the press and make certain that all slug paths are clear. At this time, you should look to make certain that all die pods, especially the series 10 and 12, are sitting square to the press bed. When sliding a XimmiX system across the press bed, die pods tend to drag and tip. This can result in sheared or damaged tools.

With the XimmiX system in position, prior to operation, we recommend that the setup be clamped in place. This will anchor the setup, which might otherwise move out of proper position. The XTCA clamp is made for this purpose and is available from Whistler. Use at least two clamps to secure the tool assembly.

The XTCA clamp is "L" shaped, with a drilled and tapped hole in the top of the "L" and a through hole in the bottom of the "L". Position the clamps beneath the 1/2" hole in the die template and secure with the clamp screws. Then place a 3/8 bolt through the hole in the bottom of the clamp and secure in a tapped hole in the bolster or subplate. The illustration below will aid you in this process:



With tooling properly located and clamped in place, you are now ready to run your product. Position the material blanks to be run conveniently near the operator. Load each blank against the gages, snap inside the stock pushers and cycle the press. Observe all press operating safety precautions.

RUNNING PARTS: Process material according to the operational procedure that the system was designed for. (i.e. 1 hit, 2 hits, hit, flip, hit, etc.). During operation, the press operator should remain observant of the tool performance and the slug accumulation. It will be necessary to clear away slugs as they tend to build up over time. Make sure that the pods are seated and that slugs do not get underneath the pods. This should be checked as required.

CHANGING TOOLS: Changing XimmiX tool setups is a simple and easy process. First you must unfasten the XTCA clamps and move the setup to your setup table/area.

With a rag or brush, completely wipe down the entire press bed. Remove all slugs and check for any nicks or dents. Repeat all the instructions that were noted previously in the LOADING TOOLS section of this manual to prepare and install your next setup. It is possible to achieve a tool change (i.e. press down time) in less than two minutes.

The primary concern in changing die setups is tool inventory: you may need some tools from the current setup in order to prepare the next setup. Obviously this will slow down die changeovers, defeating one of the major advantages of the XimmiX system.

We suggest that XimmiX users, as they develop their XimmiX systems, will accumulate sufficient tool inventories to minimize this potential for delay. In fact, some customers regard XimmiX benefits and cost to be advantageous enough that they will approach each setup on a fully tooled basis, never dismantling a setup.

SECTION "I"- MAINTENANCE

LUBRICATION: XimmiX posts are assembled with a multipurpose-type grease applied to the spring, pin O.D., and the pin bearing I.D. at the top of the post body.

Post lubrication must be maintained. We recommend application of grease to the pin every 2,000 cycles and disassembly for internal grease application every 50,000 cycles. For disassembly of the post body, remove the (3) cap screws from the top of the post assembly. Lift the post out along with the template boss. The spring will be at the bottom of the post body. Fill the opening with grease, put the post boss and the post itself back into place and put the (3) screws back.

During disassembly, check the condition of the lifter spring (XSP). Steel springs may eventually fatigue and break, requiring replacement. Visually inspect the condition of the pin (XPN), the bearing bore in the body (XPB) and the I.D. of the punch template ring (XTR). (The illustration on page 3 will help you in part identification). Expect some wear or a "polished" appearance to be present. However, if severe wear is evident, units should be replaced. At no point should there be more than .002" total difference between the pin O.D., the post body and the template ring I.D. Excessive wear will result in tool misalignment causing shearing and premature wear, a function of punch and die clearance.

Applying a small mount of light oil between the punch and guide is not necessary but will extend tool life. The easiest way to do this is to turn the punch section upside down and wipe the face of all punch and guides with a lightly oiled applicator.

NOTE: Excessive application of oil may cause slug pulling because the oil can create a vacuum-like adhesion between the punch and slug.

We recommend running dry (no oil) stock. A light lubricating oil on the stock can provide a similar benefit of punch lubrication as described above, but it can also produce the slug pulling condition described above.

STRIPPERS: Like any spring, the urethane strippers used in the XimmiX punch head assemblies have a finite life expectancy. Failure usually occurs in the form of a crack and is usually caused by over compression. If a crack appears, the unit will lose its stripping power. Replacement of the urethane is required.

At standard shut height, running maximum material, XimmiX strippers compress 22% of free length, which should provide a very satisfactory life expectancy. Most applications will be less than this.

SHARPENING & SHIMMING: The following procedure is recommended for sharpening and shimming XimmiX tools. The illustrations that follow will assist you in your understanding of the concept of sharpening and shimming of the punches and dies.

PUNCHES:

1) If you have the reversible style where both ends act as punch points, turn punch around to the end you want to sharpen.

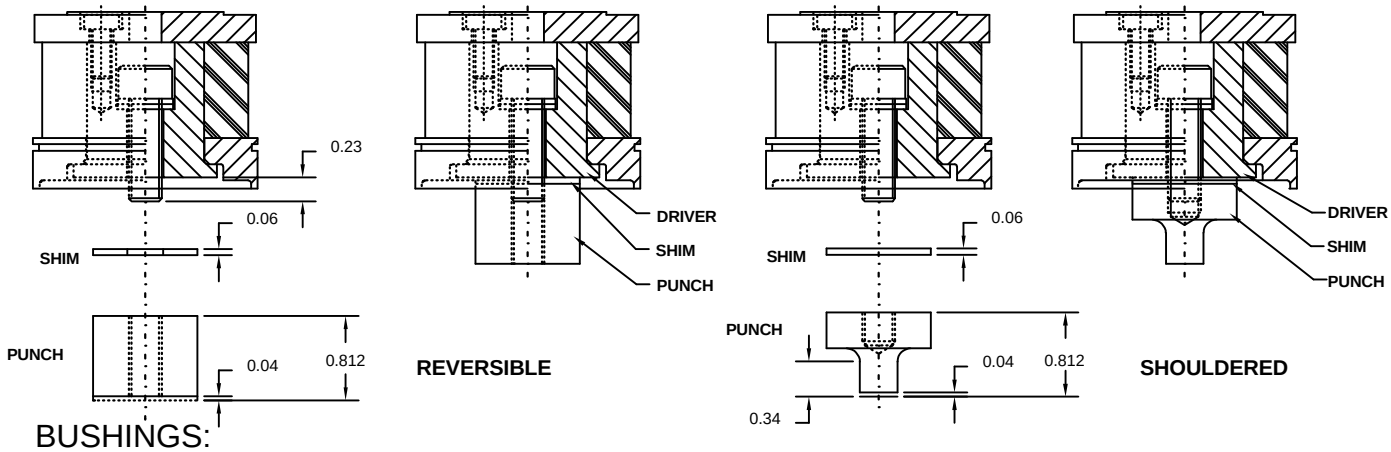
2) In XimmiX tooling, the punch enters the die bushing .039" at 6.3 shut height. Therefore, punches can be sharpened .035"-.040" without having to shim the punch.

3) The threaded stud or screw that holds the punch on the driver projects out at least .23" from the driver face. Shims are placed over the threaded stud, between the punch and the driver. DO NOT exceed a maximum thickness of .06", (this leaves only .17" thread engagement with the punches), unless a longer screw can be used for greater thread engagement ("Captive Screw" style only).

4) With a maximum shim of .06", plus .04" (from step #2 above) maximum suggested grind life of a XimmiX punch is .100".

5) On shouldered punches, caution must be taken to insure that the punch point runout radius does not interfere with the inside of the guide. This can crack the guide and cause failure (see CAUTION note in section H).

6) There is .09" of extra travel for shouldered punches at maximum material thickness (.125") and standard shut height (6.3"). When an .06" shim is applied, there is a .03" margin of safety, so the shouldered punch radius should not contact the guide under these circumstances.



BUSHINGS:

1) Because of the die pod clip configuration, XimmiX bushings can not be shimmed, so they must be sharpened to a uniform height. Bushings of different heights may produce wrinkles or deformations of the workpiece.

2) We recommend no more than .03" total material removal from bushing tops only, as damage to stock pushers and other components may occur beyond this dimension (.797" is the minimum bushing height).

GRINDING PROCEDURE:

1) XimmiX tools are made from the finest grade of AISI-A2 tool steel.

2) Sharpen with a soft grade 40-60 bonded grit surface grinding wheel.

3) Insure that all tools are held square to maintain parallelism during sharpening.

4) Maintain minimal stock removal for each pass of the grinding wheel until cutting edge is sharp.

5) Flood the grinding surface with coolant to avoid heat checks and invisible cracks which may occur and cause premature tool failure.

SECTION "J"- TROUBLE SHOOTING

PROBLEM	*CAUSE*	*SOLUTION*
LOOSE PUNCHES	- INCORRECT INSTALLATION - NO LOCTITE USED - NOT SNUGGED AGAINST DRIVER FACE WHEN INSTALLED	*- INSTALL PER SECTION "G"* *- REASSEMBLE WITH LOCTITE*
	- STRIPPED THREADS ON STUD OR CAPTIVE SCREW OR IN PUNCH	*- REPLACE FASTENER OR PUNCH*
GUIDES BREAK	- PUNCH RADIUS ON BODY CONTACTS SHAPE HOLE IN GUIDE	*- INCREASE SHUT HEIGHT, REPLACE PUNCH, SHARPEN AND THEN SHIM PUNCH*
	- GUIDE NOT FULLY SUPPORTED BY WORKPIECE (E.G. SIDE NOTCH OR CORNER NOTCH)	*- ADD MATERIAL THICKNESS PATCH TO UNSUPPORTED AREA ON GUIDE FACE OR TOP OF DIE BUSHING*
POST WILL NOT WORK PROPERLY	- BROKEN SPRING	*- REPLACE SPRING*
EXCESSIVE BURR ON WORKPIECE	- DULL PUNCHES OR DIES	*- REPLACE OR SHARPEN PUNCHES OR DIES*
	- WORN POST ASSEMBLIES	*- REPLACE WORN POST PARTS*
	- RAM/BED OF PRESS NOT PARALLEL UNDER LOAD	*- STOP PRESS AT BOTTOM OF STROKE. MEASURE RAM TO BED DIMENSION AT 4 CORNERS. USE STOP BLOCKS OR REPAIR PRESS.*
		- MOVE XimmiX SETUP TO CENTER LOAD
	- WORKPIECE MOVING DURING PUNCHING	*- VERIFY PUSHERS ARE INSTALLED AND FUNCTIONING*
		- CHECK DIE CLEARANCE. IMPROPER PUNCH TO DIE SIZES USED. REPLACE WITH PROPER DIE SIZE.

PROBLEM	*CAUSE*	*SOLUTION*
UNEVEN PENETRATION DEPTH	- INADEQUATE TONNAGE	*- CHECK TONNAGE REQUIREMENT*
	- RAM NOT PARALLEL TO BED	*- CENTER TOOLING LOAD UNDER RAM*
	- PUNCHES SHARPENED BUT NOT SHIMMED	*- ADD SHIM TO PUNCH(S)*
	- STRIPPED THREADS ON STUD OR CAPTIVE SCREW OR IN PUNCH	*- REPLACE DRIVER ASSEMBLY OR PUNCH*
KNOCKOUTS CUT THROUGH	- RAM DEPTH SET TO DEEP	*- INCREASE SHUT HEIGHT*
	- RAM OVER TRAVEL	*- ADD PRESS STOP BLOCKS*
HOLE PATTERN NOT CONSISTANT WITH EDGE OF SHEET	- GAGE POSITION	*- RECHECK BLANK SHEAR SIZE*
	- PART LOADING	*- REVIEW PART DESIGN PRINT AND TEMPLATE LAYOUT*
	- IMPROPER GAGE POSITION	*- VERIFY GAGE LOCATIONS*
STRIP FEED STICKS TO DIE BUSHING	- STRIP BURR CATCHES IN DIE	*- ADD LIFTERS TO RAISE STRIP WHEN MOVING*
WORKPIECE DOES NOT STRIP FROM GUIDE/PUNCH	- TONNAGE	*- RECALCULATE TONNAGE*
	- FATIGUED STRIPPERS	*-REPLACE PUNCH HEAD URETHANE*
	-PUNCH TO GUIDE CLEARANCE TOO TIGHT	*- INCREASE CLEARANCE*
	- IF PUNCHING GALVANIZED MATERIAL, PUNCH GALLING WILL JAM GUIDE OPENING	*- INCREACE GUIDE CLEARANCE*
BROKEN PUNCHES	- ROCKING OF PUNCH DURING PUNCHING	*- RAM MOVING F-B, OR L-R UNDER LOAD. STOP BLOCKS AND CENTER LOAD UNDER RAM*
	- TEMPLATE BENT SO PUNCHES ARE NOT VERTICAL	*-STRAIGHTEN / REPLACE TEMPLATES*
	-SLUGS UNDER DIE POD	*- CLEAN PRESS BED SURFACE THROUGHLY*