Which Punch Press Is Best For You?

Wilson Tool International®

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FOURTH EDITION

Wilson Tool International®

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INTRODUCTION – WHY WE CARE

This booklet was written as a service to the metal fabricating industry.

As the leading manufacturer of tooling for Amada®, Finn-Power®, Nisshinbo, Strippit®, Trumpf, W.A. Whitney, Di-Acro, Raskin, LVD/Shape, and Roper Whitney Turret Punch Presses, we have had the opportunity to work with many fabricators and machines. Because tooling is our only business, we felt that we could offer a non-biased perspective on the important factors in evaluating work requirements and matching them to machine capabilities, regardless of the manufacturer. If you have any questions, we would be happy to share our experiences with matching jobs, machine, and tooling for the best results.

We also welcome the opportunity to help you evaluate your tooling needs and tailor a tooling system for the machine you determine best meets your requirements. The initial tooling system can determine the success of the machine, and must be tailored to your needs.

YOUR REQUIREMENTS

It is important to first determine your production requirements so that you can effectively decide which punch press will meet your needs and best suit your operation. You will then be able to clearly judge your options and not be swayed by “hot” sales presentations that are intended only to sell a product. The following questions will help you evaluate your situation and find out what you need to know.

1. Is your work long-run or short-run?

Long and short-run characteristics determine the importance placed on the time required for tool changes, programming, and tool life.

For short-run work, important factors are:

- Quick tool changes and easier accessibility to the machine
- Faster programming and DNC Link
- More flexible and efficient tooling system
- Faster set-ups requiring less skill
- Less time taken to maintain tooling

For long-run work, important factors are:

- Less down time
- Reduced maintenance
- Lubrication system

2. Is your work job-shop or product-line?

Product-line work uses more standardized tooling than job-shop work. You can invest more in the tooling to get the full life from each tool with less maintenance. In job-shop work, you will want a more flexible tooling system providing lower tool costs and quicker tool changes to accommodate more short-runs.

3. Are your piece parts small or large?

The size of your piece parts influence the size of the machine required. Look at the size of the turrets and multi-tool options. Job-shops require higher machine tonnage. If you decide to run only small pieces, a small machine with a smaller table can perform satisfactorily. Larger presses can also provide an economical way of running small pieces using the “shake apart” technique. If you need to run large sheets, your only alternative is a machine with a large table. Keep the size of your standard sheet in mind when considering the size of your pieces—you will not want to do a lot of special shearing just to make your standard sheets fit the machine. You may want to consider a load/unload system or a machine with a built in shear. Does the machine have a parts shute?

4. What is your material type and thickness?

The thickness of your material influences your requirements for machine tonnage, stability, the clamping system, and the type of tooling. Are the machine and tooling built with enough stripping pressure for thicker material? Is special tooling needed to get through thicker gauges? What nibbling procedures and precautions must be taken?

With light material, determine if it can be punched without marking the sheet. Also consider which tooling system will give you the best looking hole or blank for your application. If the sheet is heavy, how are you going to load it?

5. Does your work include many contours, angles or large holes?

If your work involves many contours, angles or large holes, pay special attention to the nibbling and auto-index capability of the machine, including its speeds, limits, and special requirements for tooling and procedures. For example, what is the largest hole the machine can punch in one hit with standard tooling? Can it nibble the large holes you need? You may want to consider machines that come equipped with some of the following:

- plasma or laser technologies
- special contour modes
- special contour tooling
- auto-index
- hydraulic ram
- software to run Wilson Wheel™

6. What are your part tolerances?

It is important to consider your part tolerances when evaluating both the tooling and the machine's accuracy from hole to hole.

7. Does the cost of the machine make the investment practical?

When deciding if a turret punch press is a sound investment for you right now, you should consider interest rates, the quantity of parts to be run in-house, and the number of hours you can keep the machine running versus the cost of purchasing the parts from a vendor. You need to consider future possibilities and the pay back reward.

8. How fast do you expect to grow?

This question is important when considering brands, as well as individual machines. A good machine should handle your needs for some time. If you quickly outgrow the machine, you may face significant reinvestment costs for tooling, programming, preventative maintenance training, and retraining of operators for a different type or brand of machine.

If you expect rapid growth, consider your future requirements now, along with the machine's compatibility with equipment you may buy in the future.

9. What is the compatibility of your current tooling, computer system, and punching equipment?

If you already own equipment, how will the new machine interface with your existing system? Is it worthwhile to start from the very beginning for training and tooling? Does a new machine offer enough advantages to make a change in brand worthwhile? You may want to consider CAD/CAM systems to enable common programs between different machines.

10. Financing

What kind of financing does your company need? Will you pay cash or are you looking for advantageous terms on a lease or lease/buy agreement? For what length of time is financing available? Is this financing reasonable or will the combination of the interest rate and time-frame become a burden later? Is it sound business practice to finance consumable tools over a long period of time? Have you compared the different options?

11. Forming

What type of forms do you require? What is the maximum height of these forms? Will they come out of the machine ok? What are the maximum dimensions of these forms? Do you require a clean, one hit form? You may want to consider a hydraulic punch press with a programmable ram to make use of the new generation of progressive form and wheel tools. How easy is it to load these form tools into the machine. Do you have to assemble the tool in the turret?

PUNCH PRESS

After determining your requirements, you can evaluate what equipment will best meet your needs. First, examine the punch press and its basic capabilities.

1. What are the physical characteristics of the machine?

- What is the turret speed, table speed, hits per minute on 1” (25.4 mm) moves and hits per minute during nibbling? Do you need fast machine moves and capacities or will a slower machine keep up with your demand in punching?
- How long to punch one of your common parts (start to finish)?
- Does the clutch engage and disengage during nibbling? If it does, it will slow your top nibbling speed and lower productivity. Increased maintenance costs may also be incurred.
- What styles of tooling are available? Some machines are limited to a single style of tooling, while others offer more than one style. Based on your requirements, you can determine what style of tooling is best for your needs, and then make sure that it is available for the machine of your choice.
- Is the tool system in common use?
- What is the maximum hole size? If you punch many large holes, it will be easier to make them with one hit rather than by nibbling. Many machines differ in the maximum hole size and tonnage available. If you punch large holes only occasionally, this factor is not a major consideration.
- What is the turret configuration? How many stations does the turret have and what are the size limitations for each station? How many stations are available with auto-index? The number and variety of stations will affect productivity. Will you need 56 tools in the turret at one time, or will 20 tools suffice? Is it best to keep all tools in the turret for most of the parts you will be running, or can tools be changed quickly to optimize machine move capabilities for particular runs?
- How many multi-tool stations are available?
- Are all stations capable of using both rounds or shapes, or are there “dedicated” stations? If so, what is the percentage of each?
- When programming shapes, will you need an “auto-index” station for punching at different angles? What size and how many auto-index stations will you need?
- What units of measure are used to rate the machine’s capacity? When considering the tonnage capacity of competitive machines, you may have to convert some ratings for a fair comparison.
- Where is the tonnage rated in relationship to the top of the table? Some manufacturers determine their tonnage rating from the very bottom of the stroke and others from a distance above the table of the machine. This reflects a great difference in actual machine capability. For example, if you are punching 1/4” (6.4 mm) plate, the machine’s capacity is reduced if it does not reach 30 tons until the bottom of the stroke. Having the 30 ton capacity 1/4” (6.4 mm) above the table allows you to punch a larger hole or thicker material.

- What is the maximum material thickness the machine will handle? How much heavy plate do you run? Punching heavy plate, high tonnage cluster applications, and forming applications require a heavy duty machine. If you are not running a lot of heavy plate, many lighter-duty machines will be adequate.
- What is the machine weight? Do you have the facilities and flooring that can withstand the weight of the machine?
- What is the maximum sheet size capacity of the machine? Choosing a machine with a large enough sheet size capacity can save much time by not requiring the use of automatic sheet repositioning. However, there are times when automatic sheet repositioning is the only way to handle large parts. What tolerances can be held by the automatic sheet positioning? Are those tolerances acceptable?
- How big are the dead zones? This determines how close to the clamps you can punch and how much scrap is left after punching the part.
- Does the machine have a hydraulic ram with a controllable stroke length? Does it allow the sheet to move when the ram is down to take advantage of contouring and progressive forming tools?
- Is the turret bi- or uni-directional? These characteristics affect the placement of tools in the turret and the positioning speed of the turret, as well as set-up time. Must you change the tooling arrangement for each different run or can you leave in many of the tools without losing the machine's moving efficiency?
- Will you be running forming tools that require extra stripping pressure in the lower unit where a spring pack is necessary? Will the machine allow you to add one from under the turret?
- Is the machine available with an automatic tool lubricating system? This feature could save you money in replacement tooling costs, down time, and machine turret maintenance.

The following questions deal with basic machine specifications that can add hidden costs if they are not considered in relation to your shop's existing facilities.

1. How does each machine manufacturer measure air requirements? How much air pressure is required? Is an air dryer required?

2. What are the electrical requirements?

3. What type of frame construction does the machine have and what type of floor foundation is needed?

Various frame constructions require different foundations. J-style and Bridge-style frames require a minimum foundation. However, some C-style frames require a substantial foundation with as much as two feet of concrete. This incurs additional costs above that of the punch press. If you plan to move the machine to a different location in your shop, you may prefer a machine that requires a minimum foundation.

4. Is the ram driven by mechanical or hydraulic means?

Whereas a flywheel delivers more abrupt punching, a hydraulic mechanism provides smoother and quieter punching (which is helpful for thick materials). Hydraulic presses also are capable of using the new era of forming tools. Programmable hydraulic rams can obtain high speeds and offer flexibility in forming operations. It can also make a difference in the noise level.

5. What is the maximum forming dimension (feed clearance) between upper and lower turrets?

This factor is critical if you do a lot of louvers, card guides or other forming operations. Some machines have as much as 7/8" (22 mm) between turrets, others as little as 1/4" (6.4 mm). Make sure the machine has ample feed clearance as required by your parts.

6. Clutch and brake noise levels.

Punch press manufacturers use various types of clutch and brake mechanisms (depending on ram style - mechanical or hydraulic) with different types of noise suppression. Which is the most conducive to your environment? What maximum noise level can you have at your factory?

7. Are the turrets bushed?

Bushed turrets will reduce maintenance costs over the life of the machine. This is especially true if you operate the machine in a dirty atmosphere, or use tooling that tends to wear the turrets. Reworking turret bores is very expensive—it is much easier and more economical to change bushings.

8. Are machines and controls retrofittable with options for the future?

(e.g. Wilson Wheel™ Technology)

9. How long has the current model been in production?

How many of these machines have been installed?

CONTROLS

Next, you will want to examine controls. Controls are more difficult to evaluate as there are many schools of thought and every manufacturer takes a different approach.

1. Who makes the controls?

Does the punch press manufacturer make the controls or does it buy the controls from another manufacturer? There are advantages and disadvantages either way. Controls made by the punch press manufacturer may be more suited for the punch press, but may not be as flexible or as user friendly as you might desire.

2. How well are the machine and controls designed for each other?

Matching stock, “off-the-shelf” controls to a sophisticated machine can require a great amount of additional programming and process verification that could easily be eliminated by using controls designed for that particular machine.

3. What are the physical characteristics of the controls?

- Whether the controls are N/C, CNC or DNC, they should meet your basic requirements and current programming capabilities. They should also be sufficient to meet your future programming needs.
- How much memory do the controls have? Are they up-to-date with industry standards?
- What special subprograms are built into the controls? Special subprograms such as geometric input can speed programming, reduce the skill needed for programming, and add to the overall capabilities of the machine.
- Diagnostics for trouble-shooting can help keep the system up and running and help fix it when it goes down. More and more machine suppliers are offering modem diagnostics.
- A sequence and position readout can help during prototyping.
- Can you use your existing programming system or do you have to purchase a new one dedicated to the new machine?

4. How are the dead zones handled during programming?

Some programs do not allow entry into dead zones. Other programs allow you to enter dead zones with a manual override, this allows close to clamps tooling to be used giving better sheet utilization.

5. How available are post processors?

Is the controller a commonly used one; do the various CAD/CAM suppliers have experience with post processors. Special post processors can be written, but the system you buy will have to justify that extra cost.

TOOLING SYSTEMS

Although people generally consider tooling last, it really should be among your first considerations. Light sheet metal work is a good example: Using the proper tooling for light sheet metal ensures that there will be no sheet damage, producing quality parts and maintaining tight tolerances. Punching mainly heavy material might suggest a different style of tooling to get the same results.

1. What is the cost of the tooling both initially and annually?

A higher initial cost for tooling may offer low maintenance costs during operation for product-line and long-run work. Job-shop and short-run work do not require the full use of many tools. Therefore, more cost effective tooling should be purchased so that the cost can be quickly absorbed.

2. How much time and machine operator involvement is needed to change tooling set-ups?

The configurations of various tools and the way they are installed into each turret greatly affects the time required for set-up. Even the various manufacturers have different types of tooling within particular styles that can greatly increase or decrease set-up time.

3. Is sheet deformation and marring important?

To eliminate sheet deformation and marring in most materials, self-stripping tooling or positive stripping tooling with urethane or fitted strippers is a necessity. Urethane strippers are less desirable because of their expense and short life.

4. Is indexing available? How is indexing accomplished?

Which stations allow indexing? What is the cost of the tools needed to make indexing possible? Do the index stations allow for the use of multi-tools? Multi-tools increase the machine's tooling capacity. Can you add more index stations at a later date?

5. Do you need special nibbling tools?

What is the price for these nibbling tools, and what are their limitations?

6. What is the availability of standard round, shaped, and special tooling? How long is the lead time?

Lead time for tooling can be very important in job-shop work and even in product-line work. If you want minimum tooling inventories, you need the ability to obtain new tooling as soon as possible. The availability of tooling in various styles and grades of quality will also affect your decision.

7. Are there any hidden tooling costs or specials required that are peculiar to a tooling style?

Many manufacturers do not mention all the costs for a particular tooling style, such as urethane strippers or shearproof punches, or special assembling fixtures, cartridges, or expensive special tool holders. Consider the costs carefully.

8. Is the tooling available from independent suppliers or are you tied to the machine manufacturer?

9. Is the tooling adaptable to your growth potential?

Tooling should adapt easily to your growth requirements. Some tooling styles do not offer much flexibility, while others are readily adaptable to many different types of machines and would be ideal if you expect to grow. Some tooling systems are suitable for both long and short runs.

10. Slug pop-up is a common problem in high speed turret punch presses. What do various manufacturers offer to counter this?

- Slug Hugger® dies
- Air Blow System
- Vacuum slug ejection

As punch presses now have a hit rate of over 1000 hits per minute, some form of guaranteed slug retention is essential.

11. Can multi-tools be used in your auto index?

How many inserts does the multi-tool hold? What is the maximum diameter of the multi-tool inserts? What is the maximum material that can be punched? The more inserts the multi-tool holds, the smaller the maximum size. If you will be using a multi-tool, be sure you can achieve the hole sizes you need. How accessible are the punches and dies in the multi-tool? Some are more difficult to get at than others. If you are punching a lot of small holes the multi-tool is a very useful feature.

12. Warranty.

What warranty coverage do you get from an independent tool supplier if any damage is done to the machine? Is this warranty verbal or in writing? Some tools may appear inexpensive, but what will repair and down time cost? Does this warranty cover just new machines? If so, what happens as your machine gets older?

13. User list.

The best form of performance assessment is to contact other users. Phone them up without the salesperson present to verify the claims. You should contact about 5 to 10 existing users.

14. Compare price vs. cost on the tooling system for your new machine.

A competitive price should be expected from your tooling supplier, however, make sure that the overall cost of using the proposed tooling system is going to maximize the profitability of your turret punch press.

SERVICE AND MAINTENANCE

Once your machine is installed and operating, you become dependent upon it for continuous output. Service and maintenance considerations take on great importance.

1. What is the machine's national average downtime and average annual maintenance expense?

All machine manufacturers normally keep these statistics on each of their models. Some manufacturers may not want to disclose them, but you should insist on seeing them so you will have realistic expectations of downtime and maintenance. You can then determine how much extra overhead must be allotted for the machine. Are these costs within your budget?

2. What training and backup support is provided for the machine, controls and maintenance?

Good training programs in each of these areas will minimize problems and provide an easier start-up. Once you are in operation, fast answers to questions and good backup from the factory will help your production run more smoothly.

3. Where is the nearest service person located?

Will someone quickly drive to your plant if you have a problem, or will they have to fly? Once the machine warranty expires, you must absorb the cost of a service person flying to your location. If they are overloaded or too far away, service people often will try to solve problems over the phone rather than observe them firsthand. This can drastically prolong machine downtime. Is modem diagnostics available?

4. How long does it take to get service?

Travelling or other delays only add to your downtime. When the service person arrives, will language or other communication barriers be a factor? Do they work weekends, evenings?

5. Does the same person or organization service both the machine and the controls?

Machine downtime can be reduced if one person services both machine and controls. If one services the machine and another services the controls, one may tend to blame the other for the problem. In some cases, neither person wants to do anything due to lack of overlapping experience in analyzing a problem that may really involve both the machine and the controls.

6. What are the service rates?

You will incur few service costs with the machine while it is under warranty, but what about after the warranty period expires? Will the service rates be affordable or prohibitive?

7. What are the terms of the warranty?

Is the warranty for 12 months or 2 years? Does it cover most of the machine or just certain parts? Are parts that tend to wear, such as clutches and brakes or hydraulics, excluded from the warranty?

8. What is the price of the spare parts package needed for preventative maintenance?

The price and size of the spare parts package should offer the supply you need without becoming an economic burden. It should take the manufacturer's inventory and delivery time into account. Certain spare parts should be kept in-house to avoid unnecessarily long downtimes. The precaution of having a few spare parts in-house might, in some cases, reduce eight hours of downtime to 30 minutes. The manufacturer should have every part for the machine available for off-the-shelf delivery.

9. Can you buy replacement parts from other manufacturers?

The ability to buy replacement parts from other companies can be convenient and cost-efficient, particularly if there are long lead times for critical parts direct from the manufacturer.

10. Does the manufacturer offer special service plans?

What are the benefits? Do you really need it? What is the true cost of it?

THE PUNCH PRESS MANUFACTURER

The factors discussed so far have been tangible attributes that are simple to evaluate. The information you gather about punch press manufacturers will add validity to the answers you received for the previous questions. It will also help you know what to expect in future dealings with the manufacturers.

1. How reputable is the punch press manufacturer?

Is the manufacturer just trying to sell you a machine? Does the company care if you really need that machine and how it will fit your application? Is the company working with you to tailor the machine to your application and overall requirements? Does the company stand behind its promises and salesperson's words, or will they tell you what you want to hear just to get your order? Do they use ethical business practices, or are they just trying to buy your business?

The manufacturer's reputation can easily be assessed by asking their customers about the machines. Most people will be happy to share their experiences with you, so don't be afraid to ask pointed questions. Ask for the names of other users. It is advantageous to talk with a good cross section of people using the machines, rather than a select group that the manufacturer knows will give only favorable responses. Favorable responses generally come from people who were accurately told from the start what to expect from the machine and its capabilities. Unfavorable reports indicate that the expectations created during dealings with the manufacturer were not met.

2. What is the resale value of the equipment?

Resale value is an excellent indicator of a company's reputation in the marketplace and how well its equipment holds up over time.

3. How well does the equipment comply with safety and health regulations? Is the manufacturer just meeting requirements or is it looking ahead and designing additional safety features?

Most manufacturers meet safety and health regulations requirements, but it would be prudent to check for yourself. Some machines are equipped with added safety features to minimize potential problems.

4. Does the company have direct factory representatives or a manufacturer's rep organization?

Direct factory representatives generally know their product better and can offer more help in the selection process. On the other hand, a manufacturer's representative organization may try harder to find the most suitable machine because he depends upon your satisfaction for future business in other equipment lines.

FMS AND CELLULAR APPLICATIONS

Choosing between a flexible manufacturing system (FMS) or cellular system is a big decision regardless of your company's size. The right choice can mean the difference between a tremendous payback or an enormous headache.

1. Do you require a generalized system or a more specialized dedicated system?

An FMS system consists of a series of components (machinery) that have been married together for general application. A cellular system is conceived around a family of parts.

2. Is the system expandable?

Many systems can handle today's needs, but what about tomorrow's?

3. Is the system efficient when tied together?

Any system is only as fast and productive as its slowest member.

4. Can a system be left unattended?

Slug pop-up, uncontrolled tool wear, failure to strip... all of these factors can inhibit the smooth operation of an FMS system. Products such as titanium carbo-nitride (TiCN) coating, tool lubrication system, Slug Huggers®, and special tool holders are a must for any system. Are these available?

YOUR REQUIREMENTS

	YOUR REQUIREMENTS
Is your work long- or short-run?	
Is your work job shop or product line?	
Are your piece parts small or large?	
Is your material thick or thin?	
Does your work include many contours, angles, or large holes?	
What are your part tolerances?	
Does the machine's cost make the investment practical?	
How fast do you expect to grow?	
Will you quickly outgrow the machine?	
What is the compatibility of your current tooling, computer system and punching equipment with the new machine?	
What financing will you use? Will you finance both machine and tools?	
Will the machine meet your forming requirements?	
Is noise a major factor?	

PRESSES CONSIDERED

1.	2.	3.

PUNCH PRESS

	YOUR REQUIREMENTS
What is the turret indexing speed?	
Does the machine utilize Thick Turret, Thin Turret, or some other style of tooling?	
What is the table speed?	
How many hits per minute on 1” (25.4 mm) moves?	
How many hits per minute during nibbling?	
Does the clutch engage during nibbling?	
How common is the tooling style used?	
Maximum hole size?	
Turret configuration?	
What percentage of turret bores/stations accept shaped vs. round tools?	
How many stations does the turret have?	
How many multi-tool stations are available?	
How many and which stations are auto-indexable? Can more be added later?	
Is the machine available with an automatic tool lubrication system?	

PRESSES CONSIDERED

1.	2.	3.

PUNCH PRESS (CONT.)

	YOUR REQUIREMENTS
How many tools will you need in the turret at one time?	
How fast can tools be changed?	
Are machine capabilities rated in metric or English?	
Where is the tonnage rated in relationship to the top of the table?	
What is the maximum material thickness the machine will handle?	
What is the machine's weight?	
Will your flooring withstand the machine's weight?	
What is the machine's nominal sheet size capacity without repositioning?	
Does the machine have automatic sheet repositioning?	
What tolerances can be held by the automatic sheet repositioning? What overall tolerances can be held on machine?	
How big are the dead zones?	
How close to the clamps can you punch? Are the clamps retractable?	
How much scrap is left after punching the part?	
Is the turret bi- or uni-directional?	

PRESSES CONSIDERED

1.	2.	3.

PUNCH PRESS (CONT.)

	YOUR REQUIREMENTS
Will you be running forming tools? What is the maximum height and length?	
Is it necessary to change the tooling arrangement for each different run?	
How are the air requirements measured?	
What air pressure is required?	
Is an air dryer required?	
What are the electrical requirements?	
Type of frame construction?	
Type of foundation needed?	
Does the machine have an inertia flywheel or a hydraulic punching mechanism?	
Does the machine have a controllable hydraulic ram? How controllable is it?	
What is the maximum forming dimension possible between the upper and lower turrets?	
Are the turrets bushed?	
Clutch and brake design (decibel ratings)? Mechanical or hydraulic?	
Have there been retrofits and design updates?	

PRESSES CONSIDERED

1.	2.	3.

CONTROLS

	YOUR REQUIREMENTS
Who makes the controls?	
How well are the machine and controls designed for each other?	
Are the controls N/C, CNC or DNC?	
Do they meet your current programming capabilities?	
Are they compatible with your future needs?	
How much memory do they have?	
Are they up-to-date with industry standards?	
What special programs are built in?	
Do they have diagnostics for troubleshooting?	
Do they have a sequence and position readout?	
Can current programming methods be used or is the purchase of a new system required?	
How are the dead zones handled during programming?	
Will controls operate “Wilson Wheels™”?	

PRESSES CONSIDERED

1.	2.	3.

TOOLING SYSTEMS

	YOUR REQUIREMENTS
Initial cost of tooling?	
Annual cost of tooling?	
Is sheet deformation and marring important?	
Time needed to change tooling set-ups?	
Price of tools required for indexing?	
Can multi-tools be used in the indexing stations?	
Do you need special nibbling tools?	
What warranty does the tool manufacturer offer?	
What is the lead time for standard and special tooling?	
Is it a widely used tooling system?	
Is the tooling adaptable to your growth potential?	
Are there any hidden tooling costs?	
How is slug pop-up controlled or eliminated?	
How much grind life does the tooling have?	
Does the tool manufacturer offer coatings such as TiN or TiCN as an option?	

PRESSES CONSIDERED

1.	2.	3.

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SERVICE AND MAINTENANCE

	YOUR REQUIREMENTS
Machine's national average downtime?	
Machine's average annual maintenance expense?	
What training and backup support are provided for the machine, controls and maintenance?	
Where is the nearest service person located?	
How long does it take to get service? Will they work evenings and weekends?	
Does the same person service both the machine and the controls?	
What are the service rates?	
What are the warranty terms?	
Price of spare parts package for preventive maintenance?	
Are parts quickly available or will you have to carry a large inventory?	
How much will this inventory cost?	
Can you buy replacement parts from other manufacturers?	
Is a service contract necessary?	

PRESSES CONSIDERED

1.	2.	3.

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THE PUNCH PRESS MANUFACTURER

	YOUR REQUIREMENTS
Manufacturer's reputation?	
Is the machine tailored to meet your requirements?	
Are you receiving realistic information about the machine's capabilities?	
Resale value of the machine?	
How well does the machine meet safety and health regulations?	
Have you talked with a cross section of current users?	
Are current owners satisfied with their machines?	
Does the company use direct factory representatives or a manufacturer's rep organization?	

PRESSES CONSIDERED

1.	2.	3.

FMS APPLICATIONS

	YOUR REQUIREMENTS
Is a dedicated cellular system or FMS system better suited to your needs?	
Do you see a need to expand your FMS or cellular system based on future production requirements?	
How many pieces per hour/shift can the system produce?	
Will you have a minimal amount of monitoring or on-site supervision?	
Is it necessary to stop the FMS to inspect for tool wear, slug pulling and maintenance at regular intervals?	
Do you need a punch/laser combination?	
Will a punch/shear combination make sense for your products?	

PRESSES CONSIDERED

1.	2.	3.

GLOSSARY

ABS: "Air Blow System" A tool/turret lubrication option on some Amada® machines.

"A" Dimension: A measurement of the largest dimension across the shape. Usually calculated by taking the farthest point from the center of the shape and doubling it.

Auto-Index: A machine option on many manufacturer's machines that will index a small or large station tool to a specified angle, or a multi-tool station into position.

Blanking: Identifies a punching operation where the slug is kept as the part.

Die: The female part of the tool that accepts the slug or formed material. This is usually the lower unit, but it could be the upper unit in a Special Tool.

Die Clearance: The amount of space between the punch tip and the hole in the die. This should be expressed in total clearance and not per side. Clearance is determined by the type and thickness of material to be punched.

Die Land: The thickness of the hole in the die. Also referred to as die life.

Die Penetration: The depth that the punch penetrates the die at the bottom of the stroke.

Drop-In: A term used to describe a punch or guide assembly of the type that the punch body "drops in" the guide assembly; e.g. Fab 1/2" and 5/8". The 1/2" drop-in assembly accepts all previous styles of 1/2" (12.7mm) shank punches (e.g. "Old Style," Split Keeper and Snap-Apart), and goes into the 1-1/4" holder.

Fab: What we refer to as Strippit® style tooling.

Form-Down: Indicates that a forming operation is done from the top of the sheet and forming down. Usually not done on an NC turret.

Form-Up: Indicates that a forming operation is done from the bottom of the sheet and forms up. This style is usually used on an NC turret.

Galling: An undesirable condition where the material buildup adheres to the sides of the punch tip. This is the main cause of stripping problems.

Guide: The sleeve that fits around the punch assembly in small and large stations. On small stations, it is sometimes used as a stripper, other times as a guide.

Guide Assembly: Usually refers to large station holders or drop-in units.

Heat Treat: A process of hardening punches and dies to achieve optimum toughness and hardness.

Heavy-Duty Nibbling Tool for 1-1/4" Station: A special 1-1/4" station punch and guide assembly designed for nibbling and punching heavy material. It has a built-in oiling system. There have been several designs of this tool and the latest is the Series 90® type.

Mild Steel: Usually a low carbon steel, approximately 50,000 P.S.I. yield strength.

Multi-Tools: These are special holders designed to hold many small punches. They are used in an Auto-Index station that rotates the holder until the designated punch is in position. When the machine ram strikes the top of the multi-tool holder, the holder's internal ram strikes the appropriate punch.

Negative Taper: A die where the hole gets smaller as the slug passes through (carbon E.D.M. type) or the new method of burning small areas of negative taper with wire E.D.M.

Nibbling: A term used to describe a punching operation where less than the full length, width or diameter of the punch tip is used.

Notcher Stripper Plate: A tool steel, slip fit, stepped stripper plate used in a Series 80®/90® large station guide assembly to avoid punch deflection during nibbling and notching operations.

Perforator (Small Diameter Punch and Guide Assembly Tool): A style of tool that uses a small quill as the punch and is fully guided by the sleeve assembly—normally, sizes are .031" to .093" (.79 x 2.36mm). This tool is sometimes referred to as the Perforator Tool, and is used in applications where the material is thicker than the diameter of the punch. Not recommended for stainless. See Stubby Style as another solution.

Positive Taper: A die where the hole gets larger as the slug passes through. Recommended with small diameters or widths and when punching aluminum to avoid slug packing.

Punch Life: The length of the punch tip that can be used and reground before discarding the punch.

R.S.P. Stripper/Guide: R.S.P. stands for Replaceable Stripper Plate; e.g. Fab 1/2" Snap-Apart and drop-in style guides, or Thick Turret 1-1/4" station guides.

Saw Tooth Effect: A condition that occurs when punching in a straight line and the two parallel edges of the cut are not smooth. Possible causes: Machine station out of alignment, punch or die out of key, machine table or clamps out of square.

Series 90®: The latest style of Wilson-manufactured large station and small station guide assemblies. They feature “no tools needed” for adjustment. No shims required.

Shake-Apart: A programming and punching method where several parts are produced on one sheet and held on the sheet with small tabs. The sheet is then tapped on the floor and the parts are dislodged. A separate shearing operation is not necessary.

Shearproof: A punch that has four spring-loaded, retractable heels used for nibbling and notching. We offer this type of tool for the Strippit® 1-1/4” station. (Recommended for manual machines only).

Slitting Tool: A long, narrow rectangular punch and die used to part or separate a sheet or parts of a sheet.

Slug Ejectors: Devices usually installed onto the face of a punch to repel the slug; e.g. solid urethane plugs, rigid nylon tubing.

Slug Hugger®: A die made with small protrusions on the interior surfaces of the die land that hold the slug and prevent slug pulling (patented).

Slug Pulling: A costly problem in punching that occurs when the slug is pulled back out of the die because of the vacuum created between the flat surface of the punch and the slug.

Snap-Apart: A Wilson-designed punch and guide assembly that uses 1/2” (12.7mm) shank punches, and goes directly into the 1-1/4” station without an adapter bushing. The guide snaps off without having to loosen any screws.

Split Keeper: A Strippit® designed punch and guide assembly for the 1-1/4” station. Uses Split Keeper design 1/2” (12.7mm) shank punches. The guide pulls off without tools. An adapter bushing is needed to fit the 1-1/4” station.

Standard Shape: We currently have 10 standard shapes: Rectangle, obround, square, hexagon, octagon, single D, double D, long D, quad D and equilateral triangle.

Stripper Plate: The removable plate at the bottom of a guide assembly that serves to strip the material off the punches as the punch retracts.

Stubby Style: Punches made with a very short length of straight on the tip of the punch for strength. (Tip length equals sheet metal thickness plus .050”/1.27mm) Has only .030” (.76mm) sharpening life. This is the best type of punch to use when punching material thicker than the width or diameter of the punch.

TiCN Coating: A titanium carbo-nitride coating that can be applied to any punch (Minimum width or diameter of .098/2.5mm). This coating brings the surface hardness up to about 80 Rockwell “C” scale.

Tolerance: The upper and lower limits of a size specification. Not to be confused with clearance.

Tool Steel: Special alloy steel that combines different elements to produce a steel that is extremely hard and tough after heat treatment.

Universal Notch Holder: A nibbling and notching holder made by Strippit®. Although this holder goes in the 3-1/2” station, it does not take standard 3-1/2” station tooling. It takes a “universal notch” punch sold by Wilson Tool. Wilson also offers the special slip fit guide for this holder. It does not use a stripper plate.

Urethane Spring: Urethane usually gives stronger stripping power than steel springs, but does not function as well in high-speed punching applications because it heats up and loses its strength.

Wire E.D.M.: A type of machining where a computer-guided wire does the cutting of the hole in the die or other component.

WLS®: “Wilson Lubricating System” - An integral tooling lube system designed for use in machines equipped with an automatic tool lubrication feature.

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