

8" Sheet Extractor

Material Specifications

M:\Product_Line\517\Docs\8inch Extractor Specs

I. General Parameters and Terminology

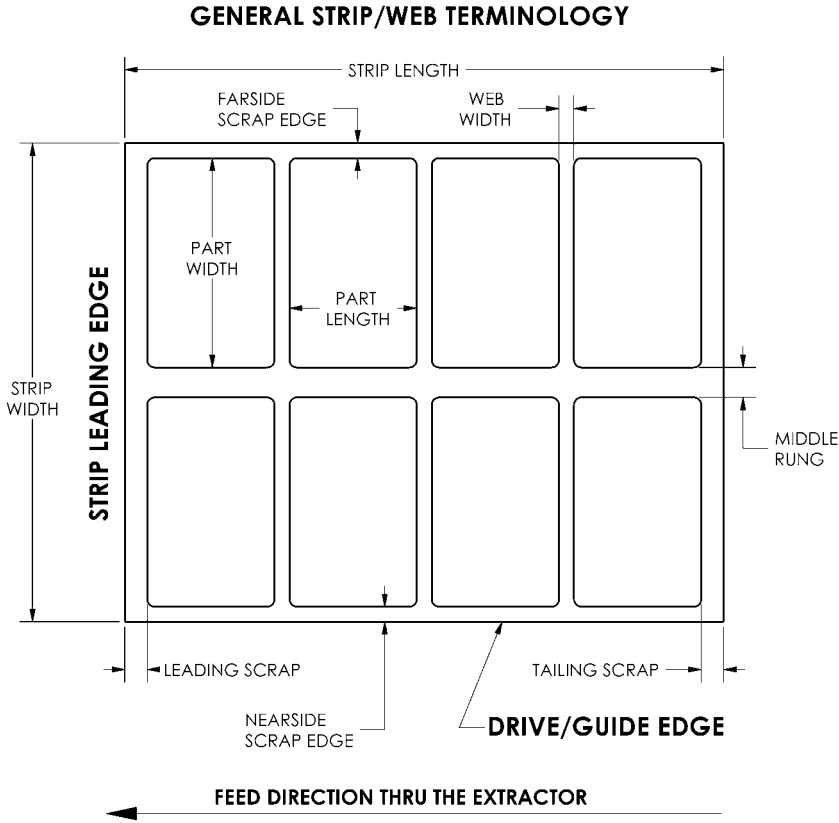


Illustration #1

Strip Width

Maximum Strip Width: 8"

Minimum Strip Width: 2"

Strip Length

Maximum Strip Length: Infinite Only if the material is supported in the input and driven/guided straight thru the extractor. The scrap must also be collected.

Minimum Strip Length: 2"

Strip Thickness Range

Maximum Strip Thickness: .030” Dependant on part layout and strip size, perforations in the web may be required to allow the web to wrap around the drive without stalling the extraction process.

Minimum Strip Thickness: .007”

Material Types

Most Plastics

Nearside Scrap Edge

Maximum Nearside Scrap Edge Width: Varies with different material. Typically 3/8” to 1/2” wide. No more than 3/8” wide for material thicker than .020”

Minimum Nearside Scrap Edge Width: 1/4” Wide Problems will arise if this edge width is smaller than 1/4” because the sensor is looking at this edge and is sensing material while running. A smaller width may prematurely release the extracting rod.

Farside Scrap Edge

Maximum Far side Scrap Edge Width: Varies with different material. Typically 3/8” to 1/2” wide. No more than 3/8” wide for material thicker than .020”

Minimum Far side Scrap Edge Width: 1/8” Wide – This edge width is not as critical as the nearside edge width. But some material is needed on this edge for proper extraction.

Leading Scrap Width

Maximum Leading Scrap Width: 0.60” Wide 1/4 the circumference of the Drive Roller-This could also be larger if dealing with flexible material under .020” thick.

Minimum Leading Scrap Width: 1/4” Wide, but 3/8” is preferred

Tailing Scrap Width

Maximum Tailing Scrap Width: ½” Wide This width could be larger if material is flexible and under .020” thick.

Minimum Tailing Scrap Width: None With typical layout no material is necessary on the Tail Edge.

Web Width

Maximum Web Width: 3/8” Wide There are exceptions. With different materials this dimension is critical in successful operation. For thinner materials this dimension could be larger, for thicker materials this could also be larger, but additional perforations may need to be made to allow the web to wrap around the drive roller.

Minimum Web Width: None Exceptions-Only if **Part Width** is within the Max/Min tolerances.

Middle Rung

Maximum Middle Rung Width: ½” Wide With Stiff material (material typically over .020”), this width may need to be narrowed or the rung may need to be perforated to allow the web to smoothly wrap around the drive roller.

Minimum Middle Rung Width: None for strips < 4” Wide / 1/8” for strips ≥ 4” Wide No material is needed in the middle rung for narrow strips provided there is adequate web material on the Farside and Nearside Scrap edges. Once the strips get wider, the increase in part size can cause the web width to cause jams. The longer the web the more of a chance the web can cause jams.

Part Size (Cont. next page)

Part Width

Maximum Part Width: 4” Wide Dependant on Web Width, Middle Rung Width, Part Profile, Die Cut Quality and Material Stiffness

Minimum Part Width: Dependant on Web Width, Middle Rung Width, Part Profile, Die Cut Quality , and Material Stiffness.

Part Length

Maximum Part Length: Theoretically - Infinite

Minimum Part Length: 1.25”

II. Nick Placement & Width

Proper Nick placement and Nick width are essential to the successful extraction of parts from a web. The function of the Nicks is to hold the Part in the web while it is being transferred to the extractor after it has been die-cut. The part must stay in the web preceding the POINT of extraction or a jam will occur. Then once the part begins extracting, the nicks must be weak enough to allow the part to break from the web. If the nick is too strong(wide), the extractor will jam.

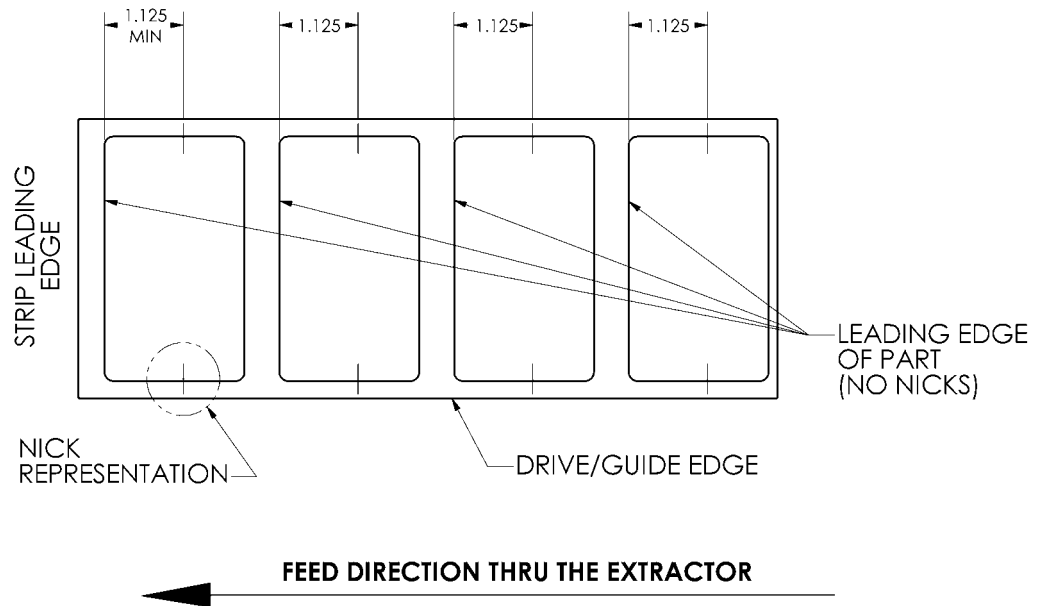


Illustration #2

Nick Location(Cont. next page)

Leading Edge of Part: NO NICKS

Tailing Edge of Part: NO NICKS

Side Edge of Part: YES
Nicks must be placed no closer than 1.125” from the leading edge of the part. This nick can be further back from the leading edge, but no closer than .25” from the tail edge of the part. A total of two(2) nicks could be used per part to hold the part in the web for proper extraction (as shown). Depending on material, a longer part will need a total of four(4) nicks per part. Ideally, if four(4) nicks are used, the distance between the pair of nicks on each side should be at least 1” while maintaining the above restrictions. If the 1.125” distance from the leading edge and the .25” from the tailing edge of the part CANNOT be met, then only two(2) nicks can be used.

Nick Size

Nick Width: Typically .015-.020”

Placing nicks is a delicate process. Once they have been placed in the die they usually cannot be corrected without replacing the die. It is recommended, when placing nicks in the die, to start by putting in a small nick and methodically work to a larger one if necessary. Different materials will offer different results, thus nicks may be different from job to job if material is changing. Material type and thickness all affect how a nick effectively holds the part in the web.

III. Part Orientation

As with the importance of the nick placement, Part Orientation plays a critical role the proper extraction. Improper part orientation will cause the extractor to jam consistently, while proper part orientation will allow successful extraction. The following examples illustrate the proper and some areas of part profiles that can cause extraction problems.

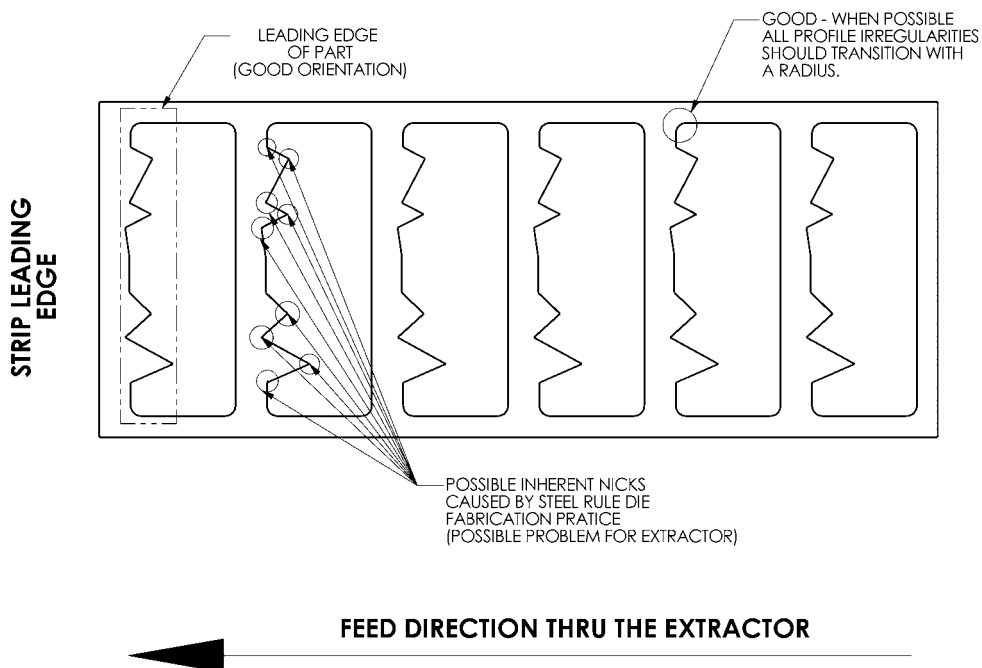


Illustration #3

- 1) As shown, any profile irregularity should always be on the leading edge of the part and a straight edge on the tail edge is recommended.
- 2) Although the parts are oriented properly, the actual part profile in this illustration can cause problems in the extractor. Sharp corners are difficult to make in steel rule dies and can cause an inherent nick between the part and web. This would solely be due to the steel rule not perfectly mating together, thus a gap between rules which would then cause a nick to be created when the part is die-cut. Depending on the quality of mate between rules, this part profile could run if extreme care is taken when fabricating the die.
- 3) A way to avoid inherent nicking is to, whenever possible, place a radius at all points the profile transitions. A radius that would allow the die maker to make the profile without having to splice the rule.

Summary:

- Leading edge of the part should have the profile irregularities
- Be conscious of inherent nicks caused by die part profiles and die fabrication
- When possible, a radius should be used a profile transitions

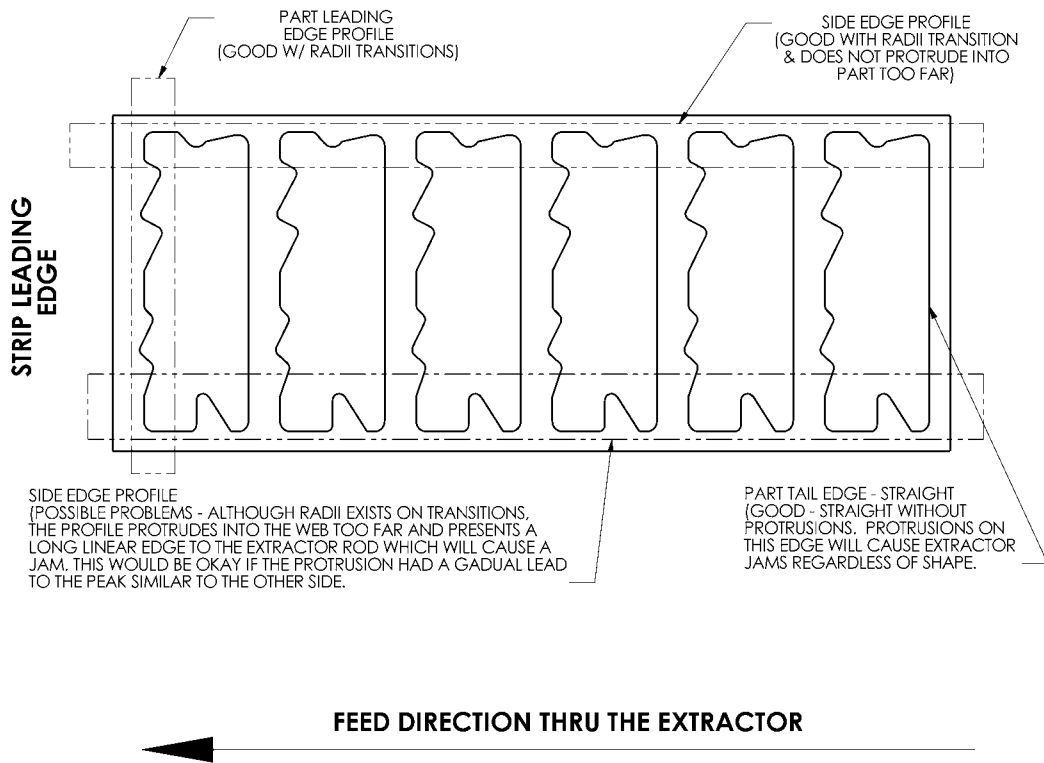


Illustration #4

- 1) Leading edge of part in Illustration #4 will offer better extraction results than the leading edge profile in the previous Illustration #3. The improvement is the radius on all the profile transitions. If the die maker makes this edge with one continuous rule, inherent nicks will NOT be an issue on the leading edge,
- 2) Side edge profiles can have an irregular shape provided protrusions are kept small and have a gradual lead to peaks. Protrusions without lead-ins will cause jams if the material is rigid enough.
- 3) Tail edge of part must not have any protrusions/irregularities. Any irregularity in the tail edge can cause jams in the extractor. If the part must be oriented with a irregular tail edge, the protrusions must be small (.030-.060) for possible success. The size of the possible protrusion as dependant on the material and part step-up/web width (see illustration #1)

Summary:

- Leading edge profile with radius transitions preferred
- Side edge profile irregularities must be carefully analyzed.
- No protrusions on the tail edge of the part are preferred. There are situations where small protrusions would be acceptable.

**Spartanics
M517
20" Sheet Extractor
OPERATOR SUPPLEMENT**

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M1075

20" Sheet Extractor

I. General Parameters and Terminology

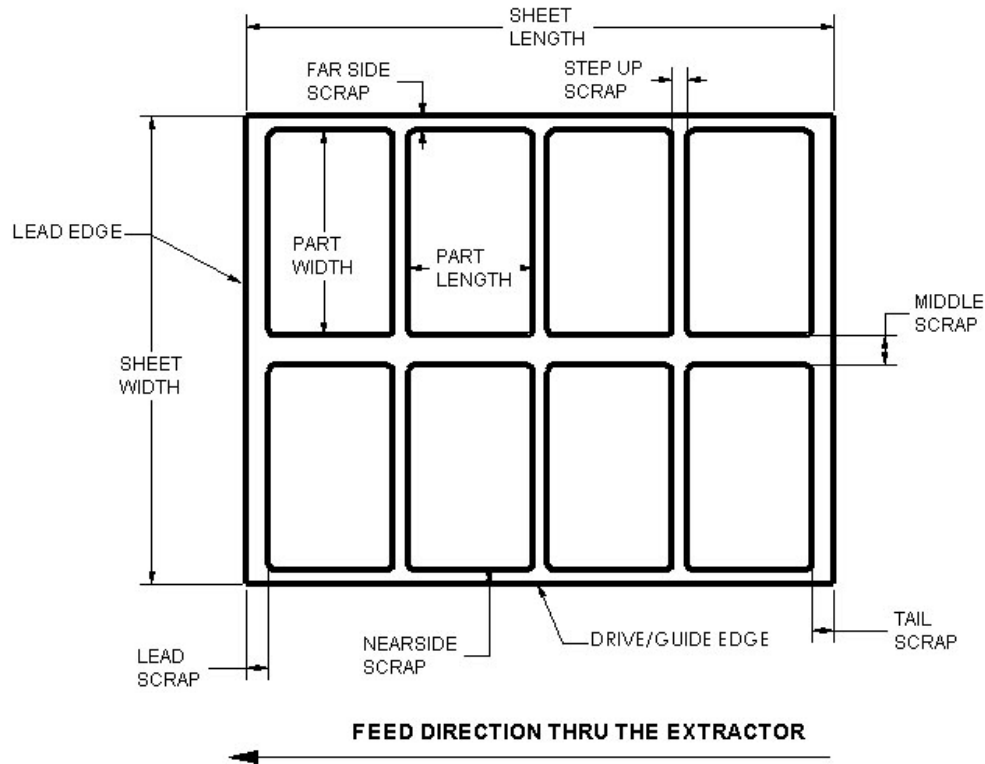


Figure 1. Sheet Terminology

Strip Width

Maximum Strip Width: 20"
 Minimum Strip Width: 2"

Strip Length

Maximum Strip Length: No specific limit, but practical limit is approximately 40".
 Minimum Strip Length: 3"

Strip Thickness Range

Maximum Strip Thickness: .030" Depending on part layout and strip size, perforations in the web may be required to allow the web to wrap around the drive without stalling the extraction process.

Minimum Strip Thickness: .010"

Material Types

Most Plastics, some papers and resins

Nearside Scrap

Maximum Nearside Scrap Width: Varies with different material. Typically 3/8" to 1/2" wide. No more than 3/8" wide for material thicker than .020"

Minimum Nearside Scrap Width: 1/4" Wide Problems will arise if this edge width is smaller than 1/4" because the sensor is looking at this edge and is sensing material while running. A narrower width may prematurely release the extracting rod.

Farside Scrap

Maximum Far side Scrap Width: Varies with different material. Typically 3/8" to 1/2" wide. No more than 3/8" wide for material thicker than .020"

Minimum Far side Scrap Width: 1/8" Wide – This edge width is not as critical as the nearside edge width. But some material is needed on this edge for proper extraction.

Lead Scrap

Maximum Leading Scrap Width: 0.60" Wide This could also be wider if the material is flexible.

Minimum Leading Scrap Width: 3/8". 1/4" is sometimes acceptable.

Tail Scrap

Maximum Tailing Scrap Width:	3/8" Wide. This width could be larger if material is flexible and under .020" thick. Additional perforations in the scrap web may allow wider scrap webs to run.
Minimum Tailing Scrap Width:	None With most layouts no material is necessary on the Tail Edge.

Step-Up Scrap

Maximum Step-Up Scrap Width:	3/8" Wide. There are exceptions. For thinner materials this dimension could be wider, for thicker materials it may need to be narrower. Additional perforations in the scrap web may allow wider scrap webs to run.
Minimum Web Width:	.020. Material and layout dependent.

Middle Scrap

Maximum Middle Scrap Width:	1/2" Wide. With Stiff material (material typically over .020"), this width may need to be narrowed or the rung may need to be perforated to allow the web to smoothly wrap around the drive roller.
Minimum Middle Scrap Width:	None for strips < 6" Wide / 1/8" for strips ≥ 6" Wide No material is needed in the Middle Scrap for narrow strips provided there is adequate scrap on the Farside and Nearside. Generally speaking, the longer the Step-Up Scrap (that is, the wider the part) the more likely the Step-Up Scrap will jam.

Part Size**Part Width**

Maximum Part Width:	Nominally, 6". The wider the Part the longer the Step-up Scrap, and the more
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likely it will jam. Depending on the material and layout, wider parts may be extractable.

Minimum Part Width:
more is recommended.

No specific minimum, but ½" wide or

Part Length

Maximum Part Length:

A practical limit of 40" is recommended.

Minimum Part Length:

1.375"

II. Nick Placement and Width

Proper Nick placement and Nick strength are essential to the successful extraction of parts from a sheet. The function of the Nicks is to hold the Part in the web while it is being transferred to the extractor after it has been diecut. The part must stay in the sheet, in its diecut cavity, until it reaches the point of extraction or a jam will occur. Then once the part begins extracting, the nicks must be weak enough to allow the part to break from the sheet.

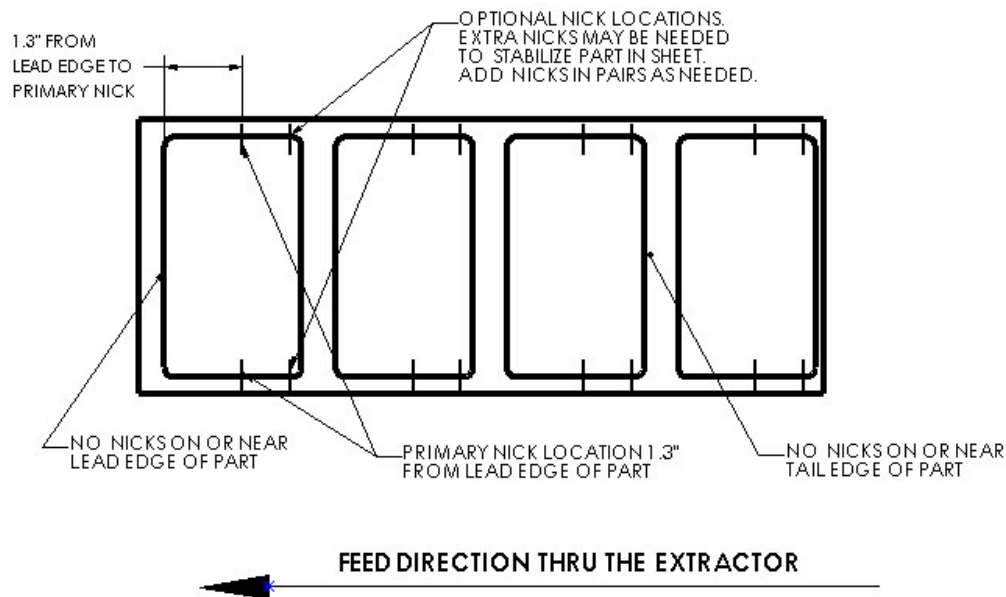


Figure 2. Nick Placement

Nick Location

Leading Edge of Part: NO NICKS

Trailing Edge of Part: NO NICKS

Near and Far Side
Of Part:

Typically one or two nicks are placed on both the near and far sides of each part. The first nick is located 1.3" from the leading edge of the part. The second nick is located 1.55" or more from the leading edge of the part, but no closer than .25" from the tail edge of the part.

Nick Size

Nick Width: Typically .010-.020"

Nicks should be as small as possible to hold the part in the sheet and not break before the sheet get to the Extractor. A rule of thumb is to make nicks equal to material thickness, but this can often be lessened. Many die markers do not have the tools to insert nicks small enough or accurately enough.

Making Nicks

To make nicks on-Press, the following steps are recommended:

- Set up the job and set penetration to get a perfect cut.
- Remove the Die and mark the locations for nicks on the ejection rubber.
- Cut short pieces of music wire, equal in diameter to the desired nick size, and place them over the cutting rule where nicks are to be. Secure the wire to the ejection rubber using masking tape.
- Install the Die in the Die Set.
- With no material in the Die, cycle the Press once.
- Remove the Die from the Die Set, and remove all the tape and music wire.
- Re-install the Die and make a test cut. If nicks are too weak, use a larger diameter music wire, and re-nick the exact sample places. Take care to trap the wire in the existing nicks. Stick

the wire into the side of the ejection rubber, so the wire is held down, pressing into the existing nick.

- Install the Die in the Die Set, and with no material in the Die, cycle the Press once.
- Repeat as needed with different gage wire.
- Once the correct diameter wire is determined, note this so you will know what wire to use the next time you run the same job.

III. Part Shape and Layout

To extract, the shape of the part and its orientation on the sheet must be correct. Some shapes and orientations simply will not extract, while others extract well. The following illustrate the do's and don'ts of part shape and layout.

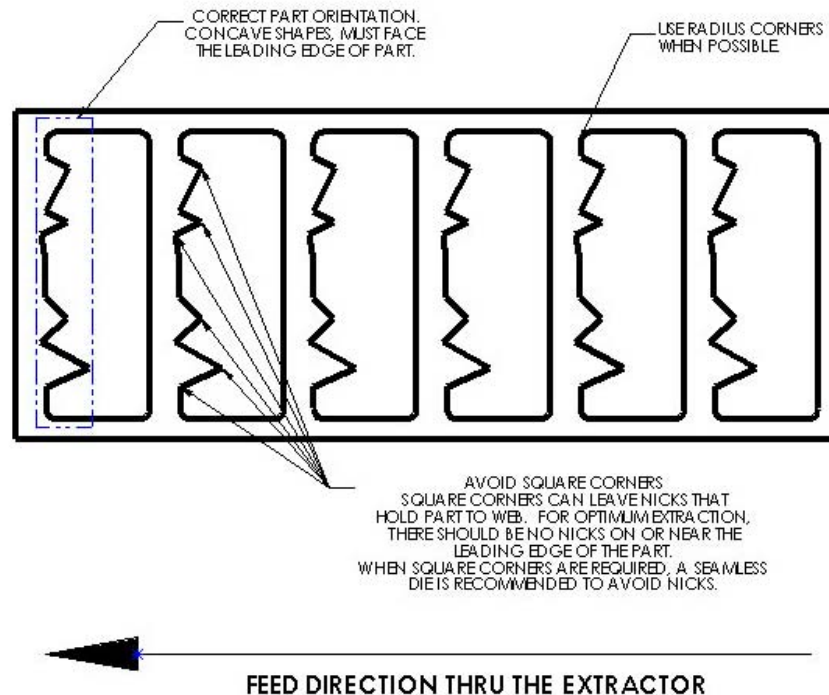


Figure 3. Part Shape and Layout

- 1) Irregular shapes should be on the leading edge of the part.
- 2) The trail edge must be straight or convex. The scrap cannot protrude into the part.
- 3) Avoid square corners at the leading edge, or if necessary, make sure the corners are tight and nick free.

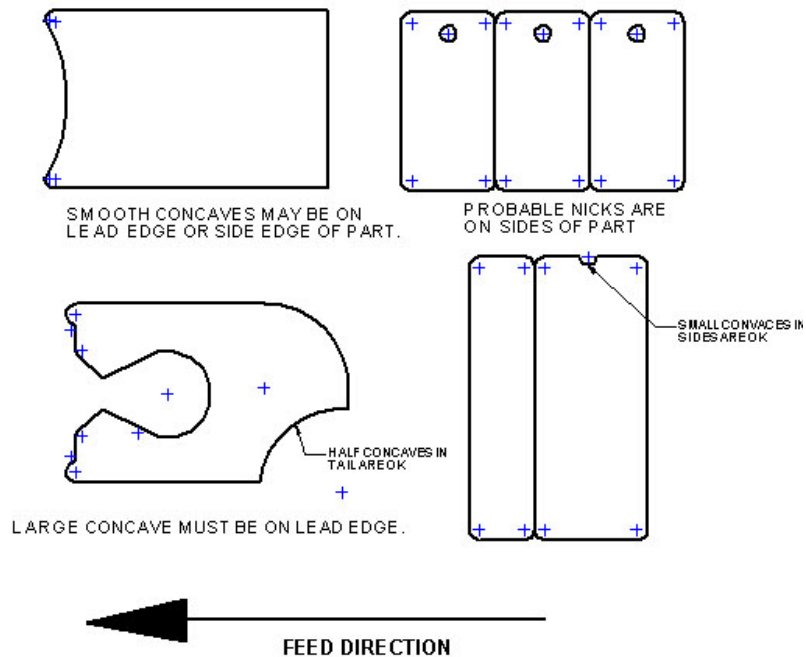


Figure 4. Recommended Part Orientations

- 4) Leading edge of part in Illustration #4 will offer better extraction results than the leading edge profile in the previous Illustration #3. The improvement is the radius on all the profile transitions. If the die maker makes this edge with one continuous rule, inherent nicks will NOT be an issue on the leading edge,
- 5) Side edges can be irregular provided protrusions are small and gradual. Protrusions without lead-ins will cause jams if the material is rigid.