DRAW DIES

Draw dies, or drawing dies (as they are also called), are simply ring dies used to reduce the diameter of a component. When you size a cast bullet, you are using a much less precise version of a draw die. The draw dies made by Corbin are extremely hard, tough venturi-shaped tools held in a 7/8-14 TPI body. A punch pushes the component through the die and out the top.

There are two general types of draw dies. The JRD-1 can be made either for bullets, or for jackets. The bullet draw die reduces a finished bullet by a small amount, sometimes as little as 0.0005 inches, and sometimes as much as 0.003 inches. However, greater reductions cause distortion of the bullet and are not feasible.

Jacket draw dies can reduce an existing jacket by a whole caliber. This is the way that .41 caliber jackets are obtained today, for instance. A .44 caliber jacket is pushed through a draw die and reduced to .41 caliber. This would not work with a bullet. Jacket drawing punches fit inside the jacket, and actually push it through base first, while bullet draw dies push the bullet through nose first.

Special versions of draw dies turn fired .22 cases into .224 or .243 caliber rifle jackets. The .22 WMR case can be drawn to a long 6mm jacket in another die, and shotgun primers can be turned into free .25 ACP jackets with another. Draw dies perform a remarkable service. Their limitations are discussed in "REDISCOVER SWAGING" in detail. Dies ending in "R" fit the standard reloading press and have a punch that fits into the press ram. Dies ending in "M" fit the Mity Mite press, and have a punch that screws into the press ram. The die goes into the press head, replacing the floating punch holder. Dies ending in "H" are made for the Corbin Hydro-press. They have a long punch that screws into the ram, and the die fits into a 7/8-14 adapter which in turn fits the 1.5-12 thread of the press head, also replacing the floating punch holder.

RFJM-22R	Rimfire Jacket Maker, 22 LR to .224 caliber
RFJM-6MR	Rimfire Jacket Maker, 22 LR to .243 caliber
SPJM-25R	Shotgun Primer Jacket Maker, 25 ACP caliber
JRD-1-R	Jacket Reducing Die, specify starting and ending caliber.

Draw dies for the reloading press are used by adjusting the die position so that you can push the component through the tightest part of the die using the end of the stroke. Careful die setting is necessary so that the component is pushed far enough into the die, yet the more powerful portion of the stroke is still utilized. If you simply put the die in the press at random settings, it might not be possible to push the component far enough so the next component pushes it out the top. Or, it might require so much effort that the operation becomes impossibly difficult.

It is important to realize that effort varies quickly with the exact part of the stroke where the most resistance is met. This is adjustable by your setting of the die. Too high, and the press easily pushes the component in, but not nearly far enough. Too low, and the press has little leverage or power to do the job, even though there is plenty of stroke to push the component through. The optimum adjustment can be found in a few attempts, if you bear the critical nature of this balance in mind.

It might seem as if a draw die is a very inexpensive way of creating a custom bullet. In a few limited instances, it is. But, for most calibers, reducing an existing factory bullet to a smaller size is more expensive than making it yourself, produces a far less accurate bullet, and limits you to the same weight and basic style as the factory bullet itself. Giving up the advantage of superior accuracy, the ability to make the bullet in any weight or style you wish, and the cost savings of using jackets and lead instead of buying ready-made bullets, seems like quite a bit to give up just because drawing a bullet down seems simple.

The lure of getting an inexpensive bullet-production die sometimes overwhelms one's sense of values, though, and it isn't uncommon for someone to sacrifice all these advantages -- all the real power of bullet swaging -- in order to draw down some existing bullet. In the instance of the .357 and 9mm, the two 8mm diameters, and sometimes in the reduction of a military bullet purchased very cheaply in quantity, the process works well enough to justify the lost advantages. It isn't a general cure, and it certainly does not replace swaging your own.

On the other hand, a jacket draw die makes good sense. The jacket will be expanded by internal lead pressure during swaging, so any diameter changes made to it are rather unimportant to the final product. The ability to change standard diameters, to use an existing longer jacket or heavier design in the next smaller caliber, is a good advantage. Sometimes, it is the only way to obtain a good, inexpensive jacket. In .41 caliber, a drawn .44 is the standard jacket used by bullet swagers. Likewise, for the .40 calibers.

One does pick up a little longer draw on one side of the jacket when the reduction is extreme. This is unavoidable without extremely high cost equipment, but its effect is primarily cosmetic: the tip of an open tip jacket may appear uneven. Accuracy generally seems unaffected by this, since the jacket walls themselves seldom become eccentric in any normal drawing operation.

A set of dies to make .14, .17, and .20 caliber bullet jackets from commercial .224 0.6-inch length jackets is available from Corbin. The process of making sub-calibers involves drawing the standard .224 jacket through these three stages, stopping at the stage you desire. The jackets must be annealed after the first draw (from .224 to .20 caliber) or else the end will break out on the next draw or during swaging.

Since the jacket for a .17 or .14 usually is shorter than that for a .224, the jacket must be trimmed at some point. This can be done in the first draw, from .224 to .20, using a PINCH-TRIM die and punch.

The punch is made with a shoulder, so that the shoulder to tip length determines the length of the jacket. Any jacket that extends beyond this punch step or shoulder will be sheared off as the punch passes through the die constriction.

The process works well provided the correct jacket is used, since the temper, grain, and diameter as well as wall thickness are somewhat critical for proper shearing action. Usually, the jacket will be made quite short, and will be drawn longer in the .17 and .14 stages. The exact final length is a bit experimental, since variations in jacket lots, temper, wall thickness, and material composition will produce a somewhat different final drawn length. But it seems quite consistent within one lot or kind of jacket.

Jacket and bullet draw dies that fit the reloading press or the Mity Mite press require careful adjustment so that the maximum leverage can be properly utilized to push the component through the tightest point in the die, yet still gain maximum stroke within the required leverage range. In some cases, such as drawing copper tubing to make long rifle jackets, there isn't any easy way to get enough stroke and enough power at the same time. In those instances, a short "helper" punch or rod must be used.

The jacket is drawn in two stages. First, the jacket is started into the die using the end of the stroke, where there is sufficient power. Then, the ram is drawn back, the helper rod inserted in the jacket, and the ram is run forward again, gaining extra stroke to push the component all the way through the ring die. This is, admittedly, a slower way to do the job. But in some cases, it is the only thing that works in a hand press.

Dies made for the Hydro-press, on the other hand, seldom have any such difficulties because the programmable Hydro-press develops whatever power is needed, at any point in the stroke cycle. With a full six inches of stroke to work with, and full power from top to bottom, it is a simple job to draw just about any length or thickness of jacket in one stroke. Copper tubing jackets are a product that point up the advantages of the Hydro-press design.

Remember that in most home swaging operations, you are accomplishing tasks in very few steps, with relatively inexpensive equipment, that the major factories spend tens or hundreds of thousands of dollars in time and equipment to accomplish, often in 10, 12, or 14 stages. Sometimes, there are obvious limitations to what you can do without a bit of leeway in your final lengths or weights. (Sometimes, the amazing thing is that the process works at all!)

On the other hand, for the person who doesn't mind experimenting and can put up with things coming out just a bit differently than his original blueprints might have demanded, these processes offer a great deal of freedom from high costs, abritrary supply sources, and the ability to make bullets that are extremely accurate and unusually high in performance. Just don't confuse accuracy and performance with predictable adherence to a pre-existing design concept! Sometimes, the way it happens to come out is what you have to work with, in the practical world of limited costs, simple operations, and available supplies. Fortunately, the way it comes out is usually pretty darn good!