CORBIN Base Guard Manufacturing System

Base Guards are copper disks which are formed in a shallow conical shape with a small hole at the center. The disk is dropped into a swage die along with a piece of lead, so that the tip of the cone faces the lead. When pressure is applied, using a punch with a shallow depression in the center, slightly larger in diameter than the hole in the base guard disk, the conical shape allows the disk to expand until it contacts the die wall and flattens. This insures that the disk will be a perfect, zero-tolerance diameter compared to the lead bullet which is being formed at the same time.

Base Guards bridge the gap between swaged lead bullets and jacketed bullets, by allowing speeds of up to 1400 fps with soft lead bullets, without the use of lubrication. Fouling is pushed out of the bore immediately after being deposited, maintaining a clean bore even with pure soft lead and no lubricants. The low cost, and the ability of a relatively few diameters of base guards to work with a wide range of calibers make base guards a far better choice than gas checks (as for instance, the .38, .357, 9mm, .380 ACP and .38 Super all use the same base guard disk).

To supply the need for base guard disks, Corbin builds an automatic base-guard manufacturing system that uses 100-lb coils of flat copper strip, feeding the metal automatically into a compact hydraulic press which forms either two larger caliber base guards, or three smaller ones, at the same time. The strip continues out the front of the press, where it will fold upon itself in a box or can be fed back onto a coil for resale as electrical grounding strap or scrap copper. The disks are ejected into a box behind the press.

The equipment consists of four components:

1 Corbin Strip Uncoiler
2 Uncoiler Sensor Standard (supplied with CSU-1)
3 Base Guard Hydraulic Press
4 Base Guard Die

The uncoiler is a power-driven, self-contained reel which looks like a giant 3-jaw inside chuck. Its job is to grip the coil of copper strip, sandwiching it between two steel disks so it cannot fall off sideways, and to feed the strip "just in time" to the press, so that the press shuttle feed mechanism does not have to contend with the inertia of the entire coil.

The uncoiler also acts as a coiling machine, with reversable manual control and speed control. It can be used to coil up the scrap strip after it has been punched. Two machines can even be used, one to coil the strip and one to feed it out to the press, although this isn't normally done.

The uncoiler sensor standard is placed between the uncoiler and the press. A distance of about 10 feet is usually required from the press to the uncoiler, so the standard normally occupies the point five feet behind the press. The standard holds two high-reliability sensors, one above and one below the length of copper strip. When the strip is pulled to a certain point, the top sensor turns on the uncoiler and feeds out just enough strip to trip the bottom sensor, stopping the uncoiler. In this way, the only weight which the press feed mechanism has to pull is the small amount of sag in the strip, not the weight of the entire coil.

The press has built-in controls to detect the absence of copper strip, so it will turn itself off when the strip runs out. It operates automatically, feeding new strip into the die and stamping out the base guards, which drop into a box behind the machine. A counter indicates how many strokes have been made during a given time period. Multiplying the number of base guards a particular die makes per stroke, by the stroke count, gives the total production.

The press is forced-air cooled and operates at a relatively fast cycle rate for a hydraulic system. Using dies which produce three base guards per stroke, production of 3,000 parts per hour can be achieved. The press also applies lubrication, through felt rollers and a lubricant reservoir, to the strip. With four base guards per stroke, production of 4,000 parts per hour is possible (only small calibers can squeeze four parts out of a 1-inch wide strip, however). This rate assumes the use of the Corbin Strip Uncoiler or CSU-1.

Changing the die set makes it possible to make other calibers on the same system. A new die set is $650. None of the other components needs to be changed, although the length of strip fed into the die may need adjustment. All calibers of base guards, from .224 to .458, can be made from 1-inch wide .030-inch thick annealed copper strip (dead soft anneal). Other materials, such as aluminum or mild steel, might be used provided a machine was developed specifically for that material: a given system is designed specifically for one material only, and will not be likely to work with any other material.

The complete system can be designed to operate on 110-120 volts 60 Hz or on 220-240 volts 50 Hz. The low voltage current requirement is 20 amperes, and the higher voltage current draw is a maximum of 10 amperes. Average draw is less than half the maximum.

The complete base guard manufacturing system can be purchased with, or without, the correct supply of copper strip. Corbin supplies 100-lb coils of 1-inch wide, edge-finished, close-tolerance copper strip with a dead-soft anneal, in .030-inch thickness. This makes between 30,600 and 91,800 base guards, depending on caliber.

The complete system without copper strip is $9,545. This includes everything needed to begin making base guards in one caliber, except the material itself. This means the press, CSU-1 uncoiler, and die set is included.

Most typically, a manufacturer will purchase the system with one coil of strip, and use the profit from the sale of that strip (made into base guards) to purchase additional copper strip from local sources where shipping may be less costly. The reason for using strip from Corbin initially is to ascertain how the system should work, with the material known to be correct. Any problems during the drawing of this known good strip would be related to either warranty problems which Corbin will remedy, or to setup and operation.

A relatively short learning curve during which some errors in setup and operation are made is not unusual. By using strip known to be correct, the learning curve is made considerably shorter. Unknown strip finish, grain structure, edge finishing, tolerances, and material alloys as well as anneal all contribute to difficulties in forming the final product. These difficulties can be identified much more easily once the operator has experienced operation using correct material.

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