



North Star Dies & How They Work

A North Star "die plate" is a piece of UHMW plastic 1/2" thick, measuring 4-1/4" x 4-1/4". "Cavity" refers to the hole in the die plate through which clay passes to make an extrusion.

"Solid die" and "one-piece die" mean the same thing: the die cavity extrudes a solid shape such as a cylinder or "coil." Die plates for these dies often have four cavities and a heavy neoprene die mask is mounted on top of the die to block off the three not being used. Note that a single die plate with four cavities is also referred to as four dies.

"Two-piece die" and "hollow die" likewise mean the same thing: the extrusion is a hollow shape such as a pipe. Hollow dies are also called two-piece dies because there must be one piece to form the outside of the shape and another to form the inside. Die plates for hollow extrusions have only one cavity.

North Star die construction is a series of proprietary processes, very much different from any other manufacturer. UHMW was chosen as the material because it wears so well and because it machines nicely. In 15 years of use, we have never seen a die wear out. The part that forms the inside of North Star dies is held in place by a Z-brace, a stainless steel part that fits exactly into a matching z-shaped slot machined into both parts of the die. This ensures that the center part of the die is automatically in exactly the right alignment, so that all walls are of even thickness.

All outside edges are given a deep 45-degree chamfer. This pushes more clay toward the center of the cavity. A tighter, stronger extrusion is the result. Die parts immediately under the Z-brace are given a deep circular bevel that helps "heal" the clay after it separates going over the Z-brace.

The Z-brace concept makes it possible to extrude all the usual shapes and many more. It is simple, for example, to extrude kiln posts and small hollow beads with an inside diameter just large enough to accommodate a thread!

Blank UHMW dies (sold in sets of six) can be worked with ordinary woodworking tools to make solid dies of your own design, and these dies are pretty simple to make. (Wood or plywood can work well for this purpose, too.) Two-part dies, on the other hand are much more complex. Here, we have found the only way to make them accurately is to cut them on computer-controlled milling machines, though one off dies are quite possible with simple tools. For those who have resources and desire to make their own two-part dies, we offer a "Blank Z-slot Die," which is a die plate with only a 1/4" center hole and a z-slot of the correct depth and configuration to match the North Star Z-brace.

Note that hollow dies can be combined in many different ways. For instance, the outside part of the square hollow used with the inside part of a small round hollow gives an extrusion like a kiln post. The outside of round hollow used with the Z-brace but no inside part gives a round extrusion with a very small (1/4") center hole, which is formed by the screw on the Z-brace.

All North Star dies will fit any North Star extruder and can be used on nearly any other extruder that has a 4" square barrel.

Measurements given for hollow dies refer to the largest outside dimensions. All walls on factory hollow dies are 1/4" thick when wet.

Finally, note that while most dies are sold in sets, any individual die may be purchased separately. The only exception is blank dies, which are sold only in sets of six. Individual dies from sets are not given stock numbers. To order, describe shape and dimension of call North Star for assistance.

***For a quotation on a custom die, mail or fax
An actual size drawing to North Star***

To Purchase Visit Your Local Dealer or Call:

1-800-231-7896

NORTH STAR EQUIPMENT, INC., P.O. BOX 189, CHENEY, WA 99004

1-509-2335-9200 * FAX 1-509-235-9203

WEB SITE: <http://www.northstarequipment.com>

VISA AND MASTER CARD ACCEPTED

(All prices FOB Cheney, WA)

BEADS, THE BEAD BRACE AND THE Z-BRACE

The regular Z-brace has a threaded 1/4" stud attached to the bottom to hold the inside part of the die. The bead brace simply has a hole instead, and is usually used with blank Z-slot dies. To make tubular beads with an inside diameter smaller than 1/4", a Z-slot die is drilled to the outside diameter of the bead. Then a thread or cord of the appropriate thickness is hung in the hole of the Z-brace, and the two parts mounted like any hollow die. Special treatment can be given to the outside of the bead extrusion by deforming the die with a file or knife or by applying a material like silicone caulk or aquarium cement to the perimeter of the cavity. Note that if an extrusion with an inside diameter of 1/4" is desired, the Z-brace can be used by itself, with the threaded stud forming the inside.

STAINLESS EXTRUDER PACKAGE AND THE SUPER EXTRUDER PACKAGE

These specially-priced packages include the most useful variety of dies in addition to the Stainless Extruder. They yield unlimited versatility and give your imagination free rein. They include many die shapes made for no other extruder, and all the hollow dies use North Star's proprietary z-slot technology to give perfectly even, solid extrusions. You can do things with clay you've never imagined before, including combining die parts to make unusual shapes!

The Stainless Extruder Package (#950) includes the Stainless Steel Extruder, the Basic Die Set, plus the Standard Accessory Die Set.

The Super Extruder Package (#960) includes the Stainless Steel Extruder, Z-brace, Basic Die Set, Standard Accessory Die Set, 2" round hollow die, 2" square hollow die, 4-cavity Handle die, 4-cavity Geometric Shapes die, the Tile Accessory Die Set, the Octagons and Stars Die Set, the Ovals and Triangles Die Set and an extra Die Mask.

USING NORTH STAR DIES WITH OTHER EXTRUDERS

All North Star dies will fit any North Star extruder and can be used without modification on nearly any other extruder that has a 4" square barrel. An adapter kit is available to allow North Star dies to be used on the Brent Handextruder, which has a round barrel of 4 1/2" outside diameter.

ORDERING DIES FROM YOUR DEALER OR NORTH STAR

Please note that while most dies are sold in sets, any die may be purchased individually (except blank dies, which are sold only in sets of six). Every die set as well as each individual die carries a stock number. To avoid confusion, please order only by these numbers.

CUSTOM DIES

North Star often makes custom dies, though custom hollow dies can be pricey. For a quotation on a custom die, mail or fax and actual size drawing to North Star.