CH4D RELOADING DIES

CH4D reloading dies are manufactured in our factory in Mt. Vernon, Ohio USA. Our dies are precision machined from high quality steel, heat treated to 59 Rockwell C to a depth of .030" for maximum durability, hand polished for smooth function, and ultrasonically cleaned and coated in a proprietary rust preventative solution.

Dimensions

For all cartridges which are currently being manufactured, there are dimensions which have been agreed upon by the manufacturers of the ammunition. These dimensions are made available through a cartridge drawing (*print*). These prints are published by the Sporting Arms and Ammunition Manufacturers Institute (*SAAMI*), USA and Commission Internationale Permanente (*CIP*), Belgium.

Our full length sizer dies conform to these dimensions. It should be noted that compliance with these dimensions is voluntary. Not all manufacturers make their reloading dies to these specifications, and although ammunition manufacturers usually stay within the dimensions they agreed upon, they do not always do so. A cartridge case which is not made to correct dimensions will probably not reload properly unless a special die (*form die*) is made to compensate for the cartridge's variances from print specifications. "Wildcat" cartridges generally do not have standardized dimensions, or the information may be conflicting, incomplete, or unavailable. “Cartridge Collector’s” books are intended for identification of unknown cartridges and are generally inadequate for obtaining print dimensions.

We have traveled thousands of miles and spent thousands of dollars obtaining print specifications of obsolete calibers that we make dies for, but the task will never be finished. In general, we have achieved useable dimensions for these calibers and can often supply them "off the shelf". However, it is possible that you may encounter a firearm of different chamber dimensions than we have observed. It is therefore the customer's responsibility to determine the die set is appropriate for their application before attempting to use the dies.

Die Identification

All of our dies are marked with an acronym that is intended to clearly identify the type of job the die is supposed to do. The following table lists all of the acronyms we use:

Acronym	*Description*
FL	Full Length Sizer
NS	Neck Sizer
BNS	Bushing Neck Sizer
ST	Seater
SLS	Straight Line Seater
TC	Taper Crimp
FT	File Trim
DT	Dillon Trim
FM, F1, F2, etc.	Form, Form 1, Form 2
RM	Reamer
BC	Blank Crimp

Application

Reloading dies are designed for reloading new cases which are of correct dimensions or cases which have expanded a few thousandths of an inch from firing. They are NOT intended for case forming and are ABSOLUTELY NOT TO BE USED FOR SWAGING THE HEAD OF THE CASE. It is the user's responsibility to insure the head (*base*) of the cartridge is not more than .002" (*.05 mm*) larger than the base (*opening*) of the sizing die. FAILURE TO HEED THIS WARNING WILL DAMAGE THE SIZER. Such abuse is not covered by warranty. If necessary, the case head can be reduced by turning or swaging the head of the case. If the chamber is oversized, the sizer can be enlarged. This must be done BEFORE attempting to size the case.

Types of Die Sets

Reloading die sets are offered in 3 types, depending on the type of cartridge being reloaded. For simplicity, these will be referred to as type 1, 2, and 3. (There is no particular correlation between "type" referred to here, and "group" which refers to price.)

Type 1: Two die set. Used for bottlenecked and very tapered cartridges which are commonly loaded with jacketed bullets. The sizer die contains a decapping rod, expander ball, and decapping pin.

Type 2: Three die set. Used mainly for straight wall pistol cartridges. there is no decapping assembly or expander ball in the sizer die, these are in the expander die. Most of our group “B” is of this type.

Type 3: Three die set. Used for straight or nearly straight rifle cartridges, pistol cartridges, and any cartridge which normally uses cast bullets. There is a decapping assembly in the sizer and an "M" type expander in the expander body.

Usage

Preparation

Cartridge cases should be clean and free of any kind of grease, carbon, or other particulate matter. This is usually accomplished with a vibratory cleaner and some form of tumbling media. We recommend CH4D Tumbling Media made from crushed walnut shells with a micro-polishing additive.

Lubrication

The purpose of case lubricant is to prevent metal to metal contact between the cartridge case and the die. This reduces friction and the force required to perform the sizing or forming operation, and prevents "galling" or metal transfer from the case to the die.

Low pressure straight cases such as 38 Special require very little lubricant. High pressure bottleneck cases and any large cases require better lubrication. Case sizing, forming, and swaging are the most demanding operations and are best done with CH4D case sizing wax, pure lanolin, or STP.

Aerosol or spray lubes are inadequate and not recommended for anything beyond light-duty applications such as straight walled pistol and very small rifle cartridges.

Heavy oil lubes can also cause issues when applied excessively. CH4D does not provide vent holes which are intended to allow venting of excess lube. Using too much lube can result in “pressure dents”.

Sizing Die Adjustment

Type 1 and 3 die sets: Adjusting the FL sizer to contact the shell holder will set the cartridge headspace to the specified dimension. This is the recommended method if the ammunition is to be used in more than one firearm.

When using a strong "O" frame press, such as the CH4D Champion Press, this adjustment is all that is required. Weaker presses may spring or flex enough to require up to an additional 1/4 turn on the die adjustment to compensate for the spring.

The most accurate, but somewhat more time consuming method of adjusting the die in these presses is to use a thin *(.0015")* feeler gage (*or even a thin piece of paper*) between the die and shell holder while sizing a fired case. When the gage is "clamped" tightly by the shell holder the spring will be compensated.

Note: *Neck sizing dies are NOT normally adjusted to touch the shell holder.*

Headspace of a firearm will increase with wear. If excessive headspace exists, or if you are not sure of the headspace of the particular firearm, the sizing die can be adjusted to compensate for this condition. This adjustment method entails adjusting the sizer approximately .030" *(.75 mm*) from the shell holder (*a feeler gage can be handy here*), then sizing a case that does not chamber freely. Try the case in the chamber, adjust the sizer .003” closer to the shell holder, size case, repeat procedure until case chambers freely. Tighten setscrew in die lock ring to allow re-installing the die in the same position next time. Cases sized in this manner may not chamber in other firearms of the same caliber.

Type 2 die sets: It is preferable to have a slight .01" (*.25mm*) clearance between the shell holder and the die, especially with a carbide sizer. If you prefer to contact the die with the shell holder this is OK, but there is no benefit in doing so.

Expander Die Adjustment

The position of the die body is immaterial so long as the expander can be adjusted to expand the case neck and slightly "bell" the case mouth. The die can be adjusted up or down in the press and the expander plug can be adjusted up or down inside the die to achieve the desired result. Since the same expander die body is used for many different calibers, the die is not marked with a caliber designation.

Seater Die Adjustment

Most, but not all, CH4D seat dies are roll crimp seaters. If you want to crimp into a cannelure or crimp groove in the bullet, start with a sized case in the shell holder and the press ram fully up to the top of its stroke. With no bullet in the case, adjust the die down to contact the case, lower ram, insert case, insert bullet in case, adjust seating stem well up in die, seat bullet, adjusting seat stem down a bit at a time until case mouth is even with lower edge of cannelure or crimp groove. Tighten lock nut on seat stem. Adjust entire die down approx. 1/4 turn. It may be necessary to adjust the die or seat stem slightly to obtain the exact crimp desired, but the above procedure should get you within .015".

Decapping Assembly Adjustment

Adjust decapping assembly so the bottom of the expander ball or decapping pin nut is approx 1/8" (*3 mm*) above bottom of die. Adjusting decapping assembly too low will allow the rod to contact the inside of the case head and bend the rod. The decapping pin should be reasonably well centered in the bore of the die to assure the decapping pin enters the flash hole.

Decapping Pin Replacement

Hold decapping rod with pliers or vise, unscrew expander ball or nut by rotating counter-clockwise. Remove decapping pin by pulling it straight out of hole in end of decapping rod. Reverse procedure to reinstall.

17 thru 264 (*6.5mm*) caliber dies use the small (*.062"*) decapping pin. 270 caliber and larger dies use the large (*.070"*) decapping pin. CH4D decapping pins are interchangeable with straight pins used by Bonanza, Herter's, RCBS, and Redding.

Decapping Rod Replacement

Hold decapping rod head firmly and unscrew decapping rod by turning it counter-clockwise. Reverse procedure to reinstall.

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