

Barreling Precision Rifles

July 7-11, 2025

\$400 or 2 credit hours

The primary focus of this class will be to complete a barreled action that will be ready for you to apply a final finish of your choice and to install in the chassis or mini-chassis that you have selected.

Basic familiarity with lathes, mills and an elementary concept of threading would be helpful to complete your project within the allotted time.

We will be discussing shop safety, a fundamental overview of measuring tools, different actions common to Precision Rifles, strategies to determine correct headspace, methods of barrel indication, various chambering techniques, efficient order of operations, timing of breaks and fluted barrels, and finally, custom thread protectors.

Given the wide range of actions from which to choose and individual student goals for each project, a comprehensive parts and tool list is difficult to compile without overlooking something for one possible project, or requesting some items that are surplus to the needs of others.

This concept also extends to the equipment available to accommodate the different setups and techniques of barreling actions that will be demonstrated. If given time to prepare the proper tools and fixtures, most projects can be accomplished with the available machines.

With that said, I would appreciate the opportunity to discuss your project with you before you register for the class. This will ensure compatibility and enable suggestions specific to your individualized needs and goals.

Please feel free to email me at logan.schmit@trinidadstate.edu

Prerequisite – Basic and Advanced Machine Shop or Machine 2 at TSJC

Instructor: Logan Schmit

Barreling Precision Rifles Parts List

An action of your choosing. As mentioned above, I would like to talk with you about your plans for your build before you register, to ensure compatibility of parts and the best results for your project.

If your action uses a separate recoil lug, one would also be required. There are a number of quality aftermarket options available that are already surface ground and ready to be used.

A barrel from a quality manufacturer in the caliber and contour of your choosing. Starting with a barrel that is at least 26" in length will simplify the initial setup. The final length of your barrel is flexible (within federal regulations).

If you're interested, a muzzle break with threads compatible with your selected barrel contour. A good rule of thumb is that the barrel should be at least .100" larger in diameter at the shoulder of the muzzle threads than the nominal thread diameter.

A trigger, scope, rings/base, and chassis/stock will be needed to finish the project, but not required for the class.

Tool List

Safety Glasses

Toolbox of your choosing

5/8" shank insertable carbide threading tool (e.g., Iscar: SER 0625 H16)

(2) Inserts for the above mentioned threading tool based on the thread pitches required

(e.g., Iscar brand: 16ER A 60 IC908 for thread pitches between 48 and 16 TPI)

(e.g., Iscar brand: 16ER G 60 IC908 for thread pitches between 14 and 8 TPI)

(e.g., Iscar brand: 16ER AG 60 IC908 for thread pitches between 48 and 8 TPI)

(2) 3/8" High speed steel tool bit blanks (1/2", or 5/8" shank insertable turning tools are an optional substitution; at least one should have an insert point radius of .005" or less. If you were to only have one insertable turning tool, I would recommend a "NKLCR0805V" with "KCGX110301R15, grade KC5010" inserts).

1/4" High Speed Steel tool bit (to grind a crowning bit).

A boring bar with a minimum bore diameter of 3/8" and a max depth of cut compatible with the cartridge that you are planning to ream. As an example, MSC# 05253489 would be workable for chambers with a case head to shoulder length of less than 2". Other bars are acceptable as well. If you have any questions about this, please contact me.

A finish reamer and headspace gauge set with pilots to match your bore size. A reamer with interchangeable pilots is preferred to ensure the best fit and results from your barrel. If you don't own the chamber reamer and headspace gauges that you plan on using, please contact me at (719)-846-5632 to ensure availability from the Tool Room. An alternative would be to rent a reamer and headspace gauge set from either 4D Reamer Rentals (406)-752-2520, or Elk Ridge Reamer Rentals (541)-471-9161.

The Tool Room has a limited number of floating reamer holders available for use during summer classes, they are on a first come, first served basis. Therefore, purchasing one of your own is optional, but recommended. I have always used a JGS Floating Reamer Holder for 7/16" reamer shanks with a #3 Morris Taper Arbor.

Magnetic base indicator holder (Noga model NF 10433 preferred).

Dial Test Indicator with 0.0001" resolution (Mitutoyo 513-403-10T)

2-3/4" long, 2mm ball, carbide contact point (MSC Part # 35894229)

6" Dial caliper

0-3" Depth Micrometer

Pin Punch Set

Bench block

4oz Ballpeen Hammer
Layout Dye
6" Smooth File with handle
60 Degree Thread Center Gauge (Starrett C391 preferred)
Thread Pitch Gauge (Unified National Standard)
.050" to 3/8" Allen Wrench Set
320, 400, 600 Grit Wet/Dry Polishing Paper (2 sheets each)
A 600 Grit EDM Stone (1/4" x 1/2" x 6")
1.5 to 5mm Allen Wrench Set (or equivalent).
6" or 8" adjustable wrench

115 piece Drill Bit Set is preferred if available. (Otherwise a stub length drill bit that is .040" under the shoulder diameter of the cartridge you are planning to ream is acceptable.)

A three foot length of 1/8" brass rod.
A bag of cleaning patches to match your bore size.
A bag of cotton balls.
A box of Q-tips.

OPTIONAL DEPENDING ON YOUR PROJECT, OR GOALS:

0-1" Micrometer (Helpful if your action requires a separate recoil lug.)
Thread Pitch Gauge (Metric)
T10 to T30 Torx Wrench Set
Thickness Gauge (Necessary if your action features a cone breech.)
A Tap matching your desired muzzle thread pitch, in class GH3 (Necessary if you plan on making a thread protector).

Endmills or woodruff key cutters would be necessary if your action requires an extractor cut in the barrel.

Please contact me for individualized tool recommendations for your specific project.