

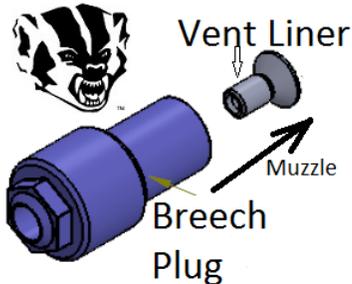
INSTALLATION & USE of bolt modified with Badger Ridge Hunter 209 Conversion Kit

(Instructions assume the bolt nose conversion has been completed by Badger Ridge or a competent gunsmith)

Prior to using this conversion, read these instructions in full, & read the rifle's Owner's Manual

1: Ensure the rifle is on "Safe", deprimed, & unloaded prior to working on it.

2: Per the Owner's Manual (a copy is available at www.BadgerRidgeInd.com) remove the old breech plug & discard. **A modified bolt will not work with the original breech plug.**



3: Clean the rifle & ensure the breech threads are clean & free of debris.
(A 20GA bore brush is useful in cleaning breech threads)

4: Place a very small amount of anti-seize grease on vent liner's threads & thread into Badger Ridge breech plug. Snug with 7/64 hex wrench & finger pressure. Ensure no anti-seize is on breech plug face, nor in the flash chamber, nor channel of the vent liner.

5: Place the breech plug into the action with the vent liner towards the muzzle & slide forward towards breech. Apply a small amount of anti-seize to first few threads of the breech plug being careful not to get any on the breech face nor in the primer pocket nor flash channel.

6: Move the breech plug into the breech & thread into the breech with finger pressure only. Once gently started, torque breech plug into breech per the Owner's Manual with the standard breech plug wrench. (A 7/16 socket on an extension will typically work as well)

7. Place bolt into action, & affix bolt screw. **Before using the rifle, make sure the bolt closes smoothly on an empty breech plug.** If it engages the breech plug & or otherwise does not close smoothly, the breech plug may not be safely & fully seated into the breech!!! This must be rectified before using the rifle or feeding primers! Typically this is due to contaminants in the breech threads. (see step 3 above)

Beware: Anti-seize in the flash channel or breech face can cause hang or misfires.

WARNING: Failure to properly clean & assemble, recognize or correct a deficiency in any component of the rifle can kill, maim, injure, or damage property. Never shoot the rifle without a vent liner in the breech plug! Never use smokeless powder in your muzzleloader!

Note: 209 shotshell primer dimensions vary slightly between manufacturers. Therefore your breech plug's flash chamber was made a bit undersized for some primers. It --may-- be necessary to ream the mouth of the plug with a letter 'C' drill bit using only finger pressure in order to allow your chosen brand of 209 primers to feed & swage into it properly. Minimize this reaming. Only go as deep as needed for the primers to feed & swage into the breech plug. Typically no more than 1/8" depth with the "C" drill bit is required. Less is better. If reamed too deep bulged primer cups & blow-back going past the primer, hang fires, or poor ignition is probable.

Breech plug maintenance: After firing 209 primers, burnt priming compound will coat the flash chamber & the flash hole of the Vent Liner. To clean: remove the breech plug & ream the flash chamber gently with a drill bit that fits in the breech plug loosely (7/32 works well). **DO NOT REMOVE METAL!** Use torch tip cleaners to clean the vent liner. Scrub & remove all fouling with the appropriate solvents, & place anti seize on all breech plug/vent liner threads before using the breech plug. Eventually the vent liner will wear out; it should be replaced when it's interior has opened to .036" or accuracy will suffer. Openings beyond .036 can deliver excessive pressure to the primer. Always use a vent liner in the breech plug, or you may see excessive/unsafe pressures at the primer!!!

DO NOT STORE YOUR RIFLE WITH THE BREECH PLUG INSTALLED, CHARGED, UNCLEARED, NOR UNPROTECTED BY GUN OIL OR BORE BUTTER. Even the high quality 416 stainless your Badger Ridge Hunter 209 conversion kit is made out of will corrode if not properly cared for. Remember all black powder & substitutes promote corrosion! Blackhorn 209 cleans up with standard gun cleaning products (Hoppe's #9 & gun oil), while all other black powder substitutes typically require organic cleaning solvents (Windex, soap, water) & organic oils/pastes (Bore butter).

TROUBLESHOOTING & COMMON MISTAKES

Read & understand the rifle's Owner's Manual & the powder manufacturer's instructions prior to using our conversion kit. Using our 209 conversion replaces the breech plug; apply what the Owner's Manual says about "nipples, flash holes, & caps" to "flash channels, vent liners, & 209 primers."

Troubleshooting & good directions are also in the Owner's Manual & your powder manufacturer's instructions.

Failure to Fire, Misfires, Hang-Fires, Bloopers, etc. Typically these are caused by one or a combination of:

1. Poorly installed conversion (not cleaning breech threads) or weak mainspring
2. Improper maintenance: Obstructions/contaminants in the flash chamber or barrel & lube that gels in cold
3. Using reduced power (ie "black powder", "Pyrodex" or "777") primers with Blackhorn209 powder.
4. Failure to seal & compact the charge when using Blackhorn209 powder.

The entire bolt assembly should be cleaned & the mainspring should be replaced during conversion. If not, light & inconsistent primer strikes are probable. Also if the firing pin protrusion was not set properly, the cross pin protrudes, or there is a bur causing the firing pin to hang up, etc: failures to fire are probable. Take the rifle to a competent gunsmith with these instructions to remedy any abnormal or unsafe condition.

Remedies for obstructions or contaminants in the flash chamber/improper maintenance:

Clean the flash channel of the breech plug with a 7/32 drill bit (use fingers only, no drills! Do not remove metal!!!) Use standard bore cleaning solvents to dissolve & remove any remaining contaminants. Clean the flash channel of the vent liner with torch tip cleaners. Remove any lubricants, greases, or oils in the flash channel prior to loading. The flash path must be clear, dry, & free of any lubricants!

--- Keep anti-seize only on the threads of the breech plug & vent liner; anti-seize or any other lubricant will reduce primer heat & cause ignition problems when in the flash chamber, or face of the breech plug.

--- Use a clean dry patch to swab out any excess oil left in the barrel before loading

--- Avoid lubricants that gel with cold (we suggest dry PTFE lubes for firing pin assemblies)

If you are using full powered standard shotgun primers & doing the above maintenance & still having issues only when using Blackhorn209 (typically diagnosed by successfully & repeatedly igniting a load of other easier to ignite black powder substitute), the cause is most likely a poor seal on the primer or projectile. **Poor primer seal can also be diagnosed by having soot or blow back on the sides of the 209 primers; only the primer's face should have soot on it:**

Remedies for proper ignition of Blackhorn209 powder:

-- Change Primer: Use only standard shotshell, full powered 209 primers with Blackhorn209.

-- Seal Primer: full power 209 shotshell primer swaged & sealed properly into the breech plug; one should feel some resistance when closing the bolt only when there is a primer in the nose. This is because the primer is being swaged into & sealing the breech plug. Failure for the primer to seal is commonly caused by excessive breech plug tuning, or poor primer fit. Correct by changing to a larger size brand of primers (some European manufactured tend to be bigger), or purchase a new breech plug & **do not over tune.**

-- Change projectile: Powerbelts, Bore Locks, Minnet, Lubed conicals, Minnie-balls, etc do not seal until the powder charge combusts & produces gases that expand & presses them into the rifling. Some clients report success using magnum primers with Blackhorn 209 & these sorts of projectiles. Western Powders recommends using snug fitting sabot bullets with Blackhorn209.

-- Change powder: Black Powder & its other substitutes will combust easily & work OK when not completely sealed; Blackhorn209 needs a good seal for proper ignition. Just switching powders may work, but is not really fixing the problem. Sealing up the primer & projectile is required for Blackhorn209 to ignite.