

# Test Report

by Nick Harvey



## A new dimension for Thompson/center

**T/C's new Dimension platform uses an interchangeable Locking Optimized Components System which allows you to shoot multiple calibres, from .204 Ruger to .300 Win. Mag. in the same bolt action rifle with a guarantee of MoA accuracy with every change.**

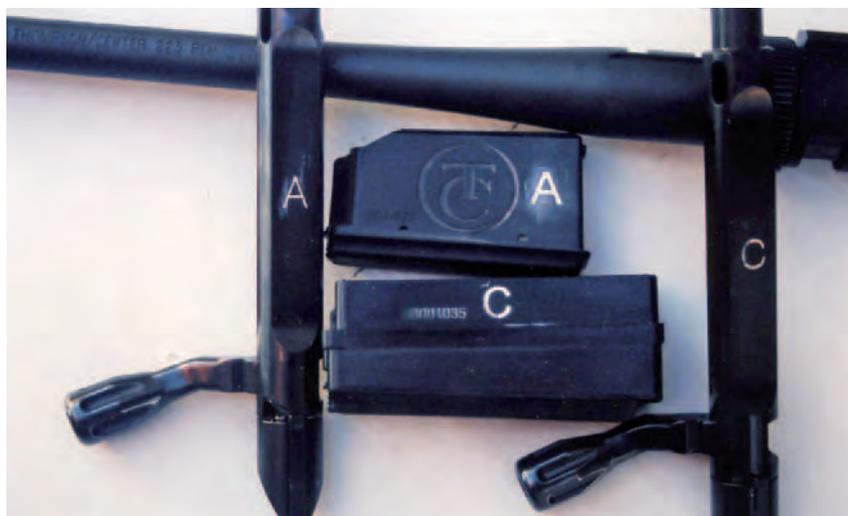
ABOVE: In a major departure from the traditional American bolt-action the new TC Dimension features a simple method of barrel interchangeability which includes tools for doing the job.

**THOMPSON/CENTER, THE COMPANY** that perfected barrel interchangeability with their Contender and Encore break-action single-shot rifles has now applied a revolutionary new takedown system to a new bolt-action rifle called the Dimension. T/C is advertising the Dimension rifle as being the most technologically advanced switch-barrel platform ever made. That's a pretty ambitious claim in category that encompasses such highly sophisticated European switch-barrel guns as the Blaser R8, the Merkel Helix and Voere LBW Tirolerin. Whether American (and Aussie) hunters will adopt the concept may present a contentious subject.

The Dimension is so different that T/C doesn't even call it a rifle; they advertise it as being an interchangeable bolt-action platform - a firearm you can build on. The Dimension boasts a "Locking Optimized Components System" (LOC) which relies upon interchangeable components to change calibres with a guarantee of MoA accuracy every time you change. It enables you to shoot a variety of calibres from the .204 Ruger to .300 Win. Mag.

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**RIGHT:** Top, a V-shaped section of the barrel extension viewed through a slot in the bottom the the receiver is bedded on an identically shaped lug embedded in the rifle stock. The right amount of torque applied with a tool to the torque collar (barrel nut), pulls the two tightly together when barrels are switched.



**ABOVE:** Components for each calibre family are marked with a different letter of the alphabet for each family bolt, magazine/ magazine housing and barrel, with the .223 and .30-06 shown here.

**ABOVE RIGHT:** Two tools - a V-block wrench and a torque wrench are shown being used to loosen the torque collar and remove the barrel.

after effecting a quick component change.

The Dimension consists of seven basic parts - a universal stock and receiver that accepts multiple barrels, magazine groups (magazine and housing), bolts and bridge scope mounts. Each rifle comes with a pair of multi-purpose LOC hand tools - one for tightening the barrel collar and a compact torque wrench for tensioning the action screws more about those later.

The stock is attached to a tubular receiver which forms the heart of the rifle and is available in righthand and lefthand versions. The receiver is a universal fit for all components and calibres. The front of the receiver ring is threaded and LOC barrels are simply slipped in and locked in place by tensioning a large serrated lock nut called a "torque barrel collar).

The light alloy receiver acts as a carrier for the bolt which has three recessed lugs that lock into the rear of the barrel



extension. A V-shaped section of the barrel extension (which can be seen through a slot in the bottom of the receiver) rests inside a lug with an identical shape that projects upward and is embedded into the floor of the stock. When the right amount of torque is applied to the front action bolt, using the tool furnished with the rifle, the two are drawn tightly together. As well as resisting recoil, the "V-within-a-V" fit orients a barrel precisely the same each time it is removed and reinstalled, thus insuring a return to zero when barrels are changed. It also resists rotational force applied to the receiver each time the rifle is fired. The rear of the receiver rests on an aluminium bedding pillar. This all contributes to what is an extremely strong, rigid assembly.

The receiver comes with a pair of factory-installed Weaver-style mounting bases, but there's an optional LOC ultra- lightweight magnesium bridge scope mount base which clamps securely to slotted dovetail cuts in the top of the barrel . A special set of one-inch low sporter rings designed to work with the optional bridge mount are a low profile design, but when added to the height of the base they position the scope to the correct height to be dead in line with the shooter's eye.

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**RIGHT:** Barrel extensions slide into the receiver ring and are indexed by a steel pin engaging a notch in the front of the receiver. Turning the torque collar onto the threaded receiver locks the barrel in place.



The Hogue over-molded composite stock, made for right or left handed shooters has a cheekpiece. The stock can only be described as unconventional, having a very unusual shape. The butt is curved upward underneath which gives it an extremely high humpbacked comb. A pair of 12mm spacers under the super-soft ventilated recoil pad allows the user to adjust the length of pull from 317 to 343mm. The pistol grip is rather thick and sharply curved and the nose of the comb is deeply dished for the base of the shooters thumb. The forend is an odd shape, more or less trapezoidal in cross-section, with the upper half curving inward. Textured Armorsoft "Traction" panels provide a secure grip in any weather and makes the stock very user-friendly.

The one-diameter fluted bolt is machined from bar stock with three symmetrical locking lugs which allow a low non-binding 60- degrees rotation. Using three lugs reduces bolt rotation, but also increases the cocking cam surface

angle, which requires a bit more effort to rotate the bolt compared with a dual lug design. Having a long handle with a large knob makes the bolt easier to operate. The entire bolt, except for the handle, and the receiver have been given a corrosion-resistant, black-nitride finish which provides a perfect match with the black synthetic stock.

The bolt face is deeply counterbored and has a T-slot extractor set into the face of the right locking lug. The extractor is a flush fit which allows a simple flat-pattern breech. The lugs engage shoulders inside the barrel extension and the chamber is faced off square at the rear to allow a relatively close fitting gap (about 0.15") to the bolt face. A short feed ramp milled into the rear of the barrel allows a little extra exposure around the lower portion of the cartridge head, but like T/C's Icon and Venture models, the Dimension's bolt face completely surrounds and supports the cartridge case head.

The receiver ring has a gas port in the right side which aligns with the cutaway section behind the locking lugs. Any gas entering the bolt through the firing pin hole is directed downward into the magazine through an oval hole in the bolt body. Any escaping gas that makes it back through the action is blocked by the rear of the firing pin and deflected by the forward edge of the bolt sleeve which has the same diameter as the bolt body.

The bolt release catch, located on the left side of the bridge doubles as the bolt stop. A lug on the rear end rises in a longitudinal slot milled in the bolt body and contacts the front end of the slot when the bolt is drawn fully to the rear. The bolt sleeve is contoured to blend in with the shape of the tang which gives the Dimension's action a streamlined appearance.

The bolt handle is raked back sharply and has a pear-shaped knob like the one on the T/C Venture. To strip the bolt you use the disassembly tool to remove the handle and release the spring tension. Then place the tool over the

## ACCURACY RESULTS

### SIERRA BULLETS

Cartridge	Bullet	Velocity (fps)	Average group (inches)
<b>.223 barrel 550mm</b>			
Win. Varmint Spec	55gn Game King	3215	0.80
Fed. V-Shok	55gn Game King	3240	0.75
<b>.30-06 barrel 600mm</b>			
Fed. Power-Shok	150gn SP	2910	1.25
Win. Super-X	150 PP	2920	1.10
Accuracy taken as the average of five three shot groups at 100 metres.			

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**RIGHT: The forend is contoured and the free-floated barrel sits above it to allow space for fitting a heavy varmint weight barrel.**

### SPECS

#### T/C Dimension

**Maker:** Thompson/Center Arms, 866-730-1614, www.tcarms.com

**Type:** bolt-action repeater with interchangeable barrel system

**Calibres:** .204 Ruger, .223 Rem., .22-250, 7mm-08, .243, .308, .270, .30-06, 7mm Rem. mag. .300 Win. Mag.

**Capacity:** 3+1 (detachable box magazine)

**Barrel length:** 550mm (medium action) 610mm (long action)

**Overall length:** 1060mm and 1111mm from .308 to .300 Win. Mag.

**Weight:** 3.175kgs  
**Trigger:** adjustable from 1.59 kgs to 2.27kgs

**Sights:** none receiver drilled and tapped. Weaver-style bases factory installed

**Metal finish:** black-nitride

**Stock:** Hogue over-molded composite, aluminium pillar bedded

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sleeve, press down and slide the firing pin with spring out of the bolt body.

Instead of having a separate bolt head that can be replaced to suit different sizes of case heads, the T/C Dimension system necessitates changing the entire bolt. LOC bolts fit multiple calibres within a series and along with the barrels and box magazines are stamped A,B,C,D, making them easy to identify. Simply match the letter on the barrel with the one on the bolt and magazine group and you have a perfectly matched assembly for each specific Dimension calibre. The detachable box magazine holds 3 rounds in all calibres.

Cartridge series interchangeable components are color coded in their packages - yellow for the .222 family (short bolt throw); orange for short cartridges in the .308 family (medium bolt throw); green for the .270 and .30-06 (long bolt throw, non-magnum); and blue for standard magnums like the 7mm Rem. Mag. and .300 Win. Mag. (long bolt throw magnum).

Button-rifled, match-grade LOC barrels carry an accuracy guarantee of one MoA for 3 shots at 100 yards. Using the AR-15 method of attaching barrels allows weight to be reduced by using an extremely light receiver machined from Type 7075 aluminium. Barrels are screwed into a 44.45mm long steel extension which slides into the front of the receiver and is indexed by a steel pin at the bottom of the extension which engages a notch in the face of the receiver. Turning a nut (which T/C calls a torque collector) onto the threads of the receiver secures the barrel in place.

The 610mm medium-weight, sporter contour barrel has a diameter of 30mm ahead of the torque collar and carries that diameter forward for about 26mm before it begins a straight taper to reach 16 mm at the muzzle. A 60-degree target crown not only protects the rifling but, allows gases to exit uniformly around the sides of the bullet instead of

**“..match-grade LOC barrels carry an accuracy guarantee of 1 MoA..”**

behind it as it leaves the muzzle, thus exerting less influence on the commencement of its flight. Dimension barrels have T/C's 5R rifling featuring five grooves and lands with angular sides which oppose each other. Non-symmetrical engraving results in a better bullet seal for more stable pressures shot-to-shot and better balance during flight. The angular sides are claimed to reduce jacket deformation and fouling, producing a barrel is faster, more accurate and less prone to fouling than conventional rifling.

The barrel sits so far above the forend that it flies rather than floats. It is so far above the barrel channel that there's enough room to grab a tom cat by the scruff of its neck and the butt of his tail and drag him spitting and scratching through the gap. The large space is necessary to allow for the installation of a heavy varmint weight barrel. The Hogue over-molded stock has a hollow forend reinforced with X-shaped struts and the trigger guard molded to be an integral part.

The Dimension's fully-adjustable trigger which is



attached to the bottom of the receiver with two cross pins has an adjustment range of 1.59 to 2.27 kgs. The trigger on the test rifle had been pre-set at the factory to let off at 1.81 kgs which is bearable for big-game, but way too heavy for serious varmint work. Using the factory provided tool I backed the screw off to get a crisp, totally inert 1.6 kg pull that suited me just fine. The bolt can be cycled with the two-position safety engaged

Detachable single-column magazines in all calibres hold three rounds that slide into the chamber as smooth as silk. Pressing a latch at the front of the magazine allows it to drop out of the rifle and into the hand with ease.

For testing the Dimension was fitted with a Meopta Meopro 6- 18x50 scope in Nikko-Stirling steel rings. A word of caution. Because the receiver wall is rather thin, there are too few threads in the two holes drilled and tapped for the bases. Consequently during the early stages of testing the screws vibrated loose causing accuracy to go to pot. Take the precaution of coating the screws with Loctite when either type of base is being installed.

The slippery black-nitride coating makes the fluted bolt cycle smoothly. When the trigger is cocked, the striker protrudes slightly from the back end of the bolt sleeve and acts as a cocking indicator. The T-slot extractor pulls fired cases out of the chamber easily, and the plunger-type ejector pelts them out to the side with vigour.

An instruction booklet describes the proper technique for switching barrels. After removing the bolt and magazine if the rifle has the bridge-style scope base, turn out the rear bolt until its half of the base is loose. Use the torque tool to break loose the front and rear action screws, then switch to the other wrench and turn them out far enough to free the barreled action and remove it from the stock. Next attach the V-block wrench through the bottom of the receiver and into the barrel shank, insert the shaft of the torque wrench into the hole of the V-block marked "L" for loosen while engaging the teeth of its gear with those on the barrel nut. Insert the torque wrench so its handle and the handle of the other tool can be squeezed together like a pliers. Once the barrel nut is loose, remove both tools and screw it all the way out of the receiver. The barrel can now be removed by sliding it out.

After sliding another barrel in, hand-tighten the barrel nut and then install the two tools, but this time insert the shaft of the torque wrench into the hole of the V-block marked "T" (for tighten). Squeeze the handles together

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**ABOVE: The Dimension has a distinctive curved buttstock with humpbacked comb and spacer in front of the recoil pad to adjust length of pull.**

until the handle of the torque wrench emits a loud click, indicating the correct amount of torque has been applied to the barrel nut.

If you've changed from one family of cartridges to another, as I did when installing a .223 barrel with a .30-06 barrel, you'll have to swap magazine housings in the stock. When attaching the stock, use the torque wrench to first tighten the front action screw all the way, before tackling the rear screw. If the barrel has the bridge-style base, its rear screw is tightened last. But make sure you tighten all three until the torque wrench gives a loud click. Insert a magazine and bolt for the cartridge you have changed to and the rifle is ready to go.

Changing barrels takes only two or three minutes, but a word of caution; if the barrel locking ring hasn't room to slide between the scope's objective bell and the barrel, the scope has to be removed. It's better to mount a scope with an objective bell small enough to provide the necessary amount of clearance. The blued chrome-moly barrels fit both right and lefthand receivers and are 550mm long for standard calibres and 600mm for magnums.

If you're looking for a rifle with the capability to handle different calibre barrels, but can't afford a Blaser, Merkel or Sauer, don't ignore T/C's new Dimension which allows barrels in .204 Ruger, .223 Rem, .22-250, .243, 7mm-08, .308, .30-06, 7mm Rem. Mag. and .300 Win. Mag. to be interchanged, along with the appropriate bolts and magazines for them. Each different family of component packages, has each part within a specific group identified by a letter of the alphabet. For example, barrels in .204 Ruger and .223 Rem. are permanently marked "A" as are the bolt, magazine and magazine housing that are compatible with them. The other component families are: "B" (.243, 7mm-08 and .308), "C" (.270 Win. and .30-06) and "D" (7mm Rem. Mag. and .300 Win. Mag). The .22-250 requires its own magazine but uses a "B" housing. To prevent combining the wrong parts, the bolt from one family will not work with a barrel from another family.

Bolt length is the same for all cartridges, but bolt travel is varied for cartridges of various lengths by machining the bolt stop groove in the bolt bodies to different lengths - short, medium, long and magnum. When the rifle is cocked, the cocking piece protrudes from the rear of the bolt shroud and acts as an indicator.

The rifle was tested for accuracy first with the .223 barrel and then with the .30-06 barrel; the changeover took about five minutes. The results are shown in the table. While it won't rate high for beauty, the Dimension's stock proved very comfortable to shoot. Its futuristic appearance notwithstanding, it's an extremely versatile outfit that can be transformed from a varmint rifle, to a medium game rifle or a big-game rifle by simply swapping barrels. Its innate practicality makes it a top choice for the one-gun man. 🎯