

Checking Out Revolvers

Maintenance tips for wheel guns.

by RK Campbell

Despite the auto loading pistol's popularity, I'm still seeing plenty of revolvers in my shop. Some have been butchered by the owner and others have honest wear. Modern revolvers have been subject to a number of cost cutting modifications and production procedures. While some say the modern revolver is as good, just different, I point to the fact that the pinned and recessed revolvers of a generation ago continue to bring a premium not only from collectors but from those interested in a hard use revolver. Modern revolvers may be consistent due to CNC machine production but in some cases the material is cheaper. Let's look at the operation and checklist for working the revolver.

Revolver Function Overview

While this description is of Smith and Wesson designs, it applies to most double action revolvers. As the trigger is pressed to the rear the hammer is raised from rest. The cylinder stop drops to allow the cylinder to turn. The hand rises to engage the extractor ratchet and the cylinder begins to rotate. The cylinder stop engages the cylinder, then the hand drops off the extractor ratchet as the cylinder locks. The hammer drops as

the trigger reaches the end of its travel and releases the sear. The hammer moves forward and the revolver fires. As the trigger is released, reset occurs. The hammer moves to the rear. The hammer is fully back at rest and held in position by the rebound slide. The cylinder stop and the hand now reset.

First, after triple checking to be certain the revolver is unloaded, press the trigger and check the double action trigger. The trigger compression should be smooth with no hitches and without unnecessary roughness in the action. The double action trigger action should be consistent for each trigger press. Next, cock the hammer when single action operation is an option and check the single action mode. The single action trigger should release smoothly. Be certain the cylinder locks into the bolt stop as the hammer is moved to the full cock notch. When testing the single action operation I cock the hammer slowly and keep an eye on the bolt stop. The bolt stop should lock into the notch in the cylinder just before the hammer reaches full cock. Test each cylinder. Sometimes the timing is off on just one and this can be a result of end shake or a bent

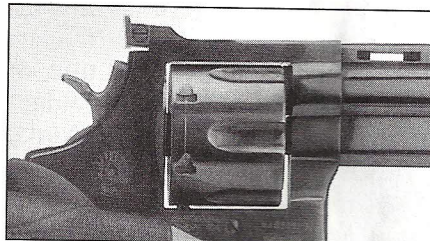
crane. When testing the double action timing the bolt stop should lock just as the hammer falls.

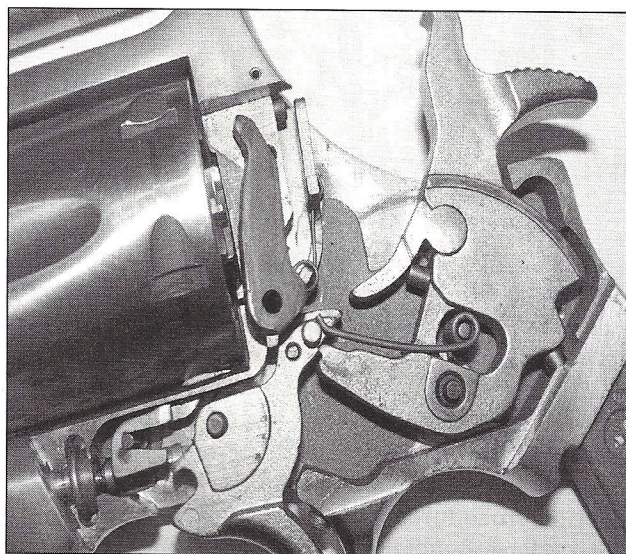
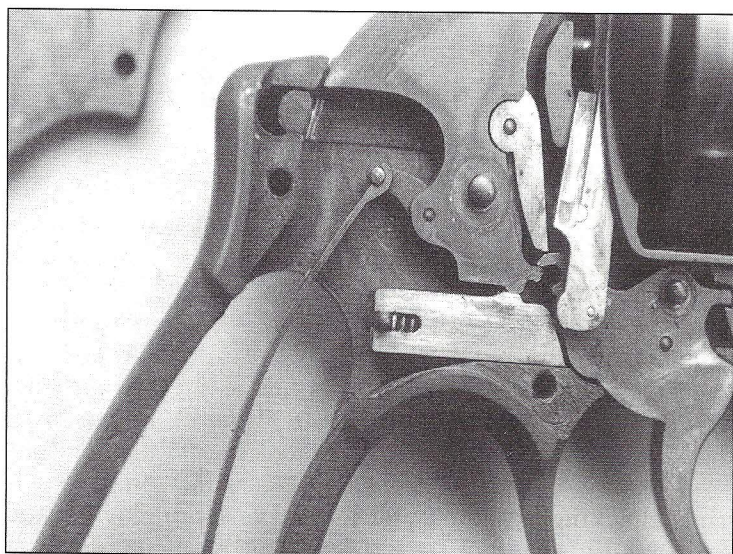
The bolt stop and hand will also be tested with this procedure. While testing the double action press, keep the trigger back down and rock the hammer back. Rock the cylinder and see if there is excess motion. The cylinder may have some play but too much slop is unacceptable. Move the cylinder laterally and check for play. Only a few thousandths of an inch in movement is acceptable.

Release the trigger and let it move forward. This is a test for trigger reset. Some shooters like to clip a coil or two from the rebound spring and this test will indicate if this has occurred. A few brisk pulls of the trigger in the double action mode executed rapidly will indicate if there is any problem. The trigger should return to position briskly after each trigger press. A tight trigger action is good; a too light or inconsistent trigger action is a sign of trouble.

Another, sometimes overlooked, test is to cock the hammer in the single action mode and apply forward pressure. If the hammer falls forward you have a serious problem, indicating someone has ground the

Below left: Even an old transitional Smith and Wesson revolver such as this Perfected Model relies upon the same principles as the modern revolver. **Below center:** By carefully cycling the action you will be able to feel the movements and determine if the piece is cycling correctly (photo courtesy PAST.) **Below right:** This old revolver has seen hard use, however, the problems are primarily cosmetic. The action was very tight and in good condition.





connecting surfaces of the hammer too aggressively, resulting in a dangerous situation. When doing a trigger job an inept individual may grind and not keep the original angles rather than just carefully polishing the hammer contact points.

Check the barrel cylinder gap with a feeler gauge. The ideal barrel and cylinder gap is often quoted as 0.006. Only occasionally will a gap be tighter, however, the gap is often larger on modern inexpensive revolvers. A measurement of 0.010 is not unusual. A quick check of a number of the revolvers around my shop and in the safe reveals a representative sample right on the money.

Above left: The action of this pre-war Smith and Wesson is still viable after many decades of use. The old long action revolvers differ little from the most modern revolvers, the primary difference being most current revolvers use a transfer bar system. **Above right:** Wait, that isn't a Smith! No it isn't but the operating principles apply to Dan Wesson revolvers as well.

A Taurus 605 .357 Magnum revolver had a barrel and cylinder gap of 0.006 on the five chambers. A Smith and Wesson Model 66 was 0.008 on the cylinders. A Taurus Model 85 .38 Special was less consistent with three of cylinders right at maximum tolerance (0.010) with the other two at 0.011.

There are two types of barrel cylinder gap to measure. After cartridge ignition the cylinder is pressed back by recoil against the recoil shield. At that instant barrel and cylinder gap is the widest. Lead spitting and the greatest velocity loss occurs at this point. When the cylinder isn't under pressure there is a different reading. The difference may be 0.002 of an inch. If evident (more than 0.005)

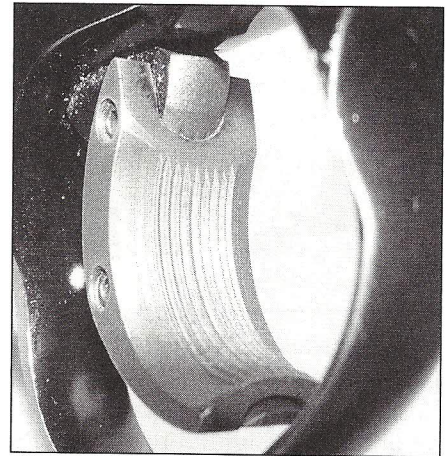
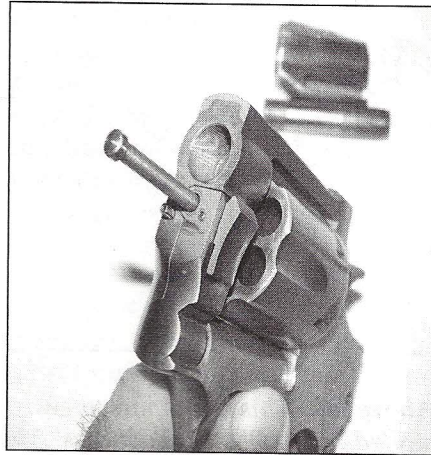
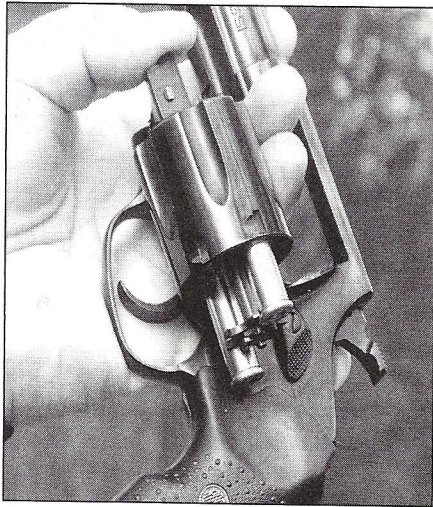
endshake may be fixed with bushings, such as from Power Custom (powercustom.com). Older revolvers often are tighter but the worst examples from early production are often pretty bad. While few modern handguns are as tight as the older revolvers, production seems more consistent across the board.

When checking headspace look to the center pin at the end of the ejector and watch where it contacts the recoil shield. It is simple enough to use a spent case to check headspace by loading the chambers. Spent cases from the same gun being checked will slip back into the cylinder and chambers. Otherwise, first resize the case. Be certain there is clearance. The distance between the case head and the recoil shield should be about 0.008, with 0.010 about ideal.

You may measure headspace on the revolver without moving the cylinder to the rear but you do not learn as much. When checking headspace without pressure on the cylinder readings may be as high as 0.012. A



Left: Double action revolver shown cocked in the single action mode.



greater gap may yield misfires, a potential problem with many .45 ACP revolvers. They are not as combat reliable as some make them to be and often need attention to fire reliably. Endshake, yoke and ejector wearing can cause excess headspace.

When the revolver is opened and the cylinder swung out on the yoke, the motion should be smooth and the operation should be free of binding. Press the ejector button. The ejector rod should be tight. They may work loose under firing and should be tightened periodically. The cylinder should rotate freely whether the barrel is pointed upwards or downward. The rotation should not feel gritty. Upon being closed the cylinder should not touch the rear of the frame. As you slowly close the cylinder note that the yoke should line up properly with the frame and not require force to close. The cylinder should not contact the barrel when the cylinder is closed and should rotate freely on its axis.

Right: This modern .22 Magnum from Taurus tested out just fine for barrel and cylinder gap. Modern revolvers are often very consistent. **Far right:** Light .22 revolvers often come into the shop with a heavy trigger action. There is little that can be done because rimfire cartridges need a very solid blow to ignite. Reducing the weight of the action will result in misfires.

Above left: If the spent cases do not fall free after the firing test it is a sure sign of trouble. **Above center:** Seldom is removing the barrel required. This revolver is the Dan Wesson, a kissing cousin of the Smith and Wesson. **Above right:** If a revolver comes into the shop with a trigger shoe, counsel the shooter to get rid of it. This one was involved in an accidental discharge. Trigger shoes are useful only for single action target shooting.

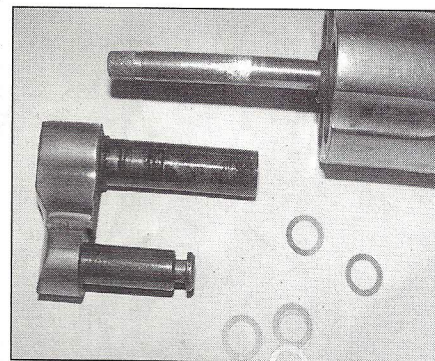
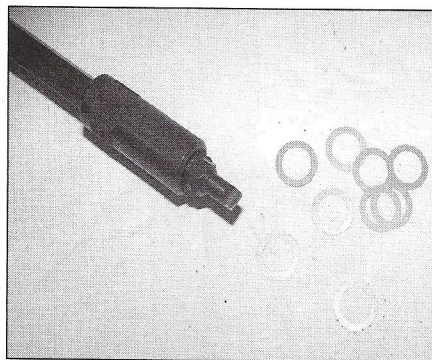
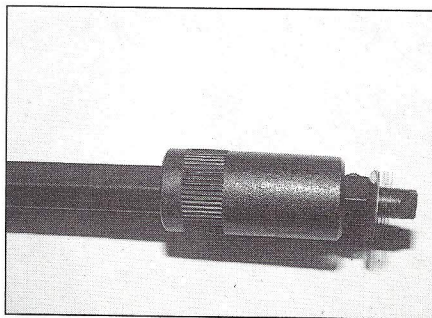
A common complaint with the revolver is that cylinder throat diameter isn't conducive to good accuracy. The fact is the modern Smith and Wesson revolvers are the finest ever produced in this regard, thanks to precise manufacturing. Older revolvers may have a problem. Too large a throat and you have gas blow by and the base of lead bullets may even be deformed. The throat should be about 0.0005 larger than the groove diameter of the barrel. Remember a small or tight throat will swage the bullet down and it will more or less rattle through the bore, resulting in poor accuracy.

It is easy to check the throats. Press a lead bullet through the throat, then measure the bullet. It only works once, so you will need a number of bullets to check. An old

trick with cast bullet shooters was to size the lead bullet by pressing them through the throat of the individual revolver rather than a sizing die and it worked pretty well. The rule is that a tight throat can be reamed to a larger diameter but the larger, sloppy throat cannot be squeezed tighter. Fortunately loose throats in modern revolvers are seldom encountered. Tight ones sometimes are encountered but may be addressed with a reamer.

In the September 2012 issue I covered sideplates and sideplate screws ("Revolver Sideplates, Cleaning And A Surprise"). A simple test is to use a Chapman or other properly sized screwdriver and be certain the each sideplate screw is tightened down properly. Carefully





examine the revolver to be certain it is in good, general operating condition. Check the sights, particularly on adjustable sighted revolvers. Be certain the front post isn't bent. Check the sight blades are in place on adjustable sight revolvers and are properly screwed to the frame. The cylinder release is sometimes loose, even with the screw missing. Grip screws may be missing or the wrong screw may be encountered.

The forcing cone should not be cracked and relatively free of carbon deposits. The chambers in the cylinder should be inspected carefully one by one. They should not be caked with powder or lead residue or rings of lead. The face of the recoil shield and the firing pin tunnel should be free of build ups. When the revolver is examined, clean and lubricate it. A drop of oil on the

Above left: This Chapman screwdriver is carrying a load of the easily-installed Power Custom bushings. **Above center:** Power Custom end shake bushings. **Above right:** Power Custom end shake bushings ready for installation.

hand and one the cylinder stop is all that is usually required. Be certain to carefully check the ejector star. Often unburned powder collects under the ejector star and will impede function.

End Shake Bushings

Any cylinder play more than 0.005 is end shake and needs to be fixed. Pull the cylinder to the rear and measure the barrel and cylinder gap with a feeler gauge and then the barrel cylinder gap. Simply pop the yoke out. Taurus and Smith and Wesson differ but the end shake bushings

work in both and will cure this in a problem revolver. Usually two bearings at 0.002 will do. Three yield 0.006. This tightens the revolver by pressing the yoke over the bushings and the main bushing on the yoke. The parts number at Brownells is #713-100-002WB.

After some forty years of working with the revolver I still find them fascinating for the intricacy of its lockwork, the precision workmanship of some and the reliability of the design. When they come into the shop keep an open mind and your eye on details. **AG**

Below left: The crane fits just fine in this K frame Smith and Wesson. The exterior, however, shows hard use. **Below center:** This revolver has taken a beating during recoil. The revolver needs to be clean and examined for eccentric wear. **Below right:** Whether the revolver is a new .44 such as the one on top or an old I frame .32, bottom, the basic check list applies.

