30196

Hyskore®

BENCH BEAST® UNIVERSAL COMPETITION REST

*Shown with the (optional) #30195 Joystick Rest and the #30201 Connecting Rods

Use As A Rear Rest

Shown With The Optional #30195 Joystick Rest & #30201 Link Rod Set

*Guns, Scopes, Ammo, Etc. Are (Obviously) Not Included

Use As A Front Rest

The Hyskore® Universal Competition Rest can be used as either a front or rear rest. As a rear rest, it allows the shooter to fine tune both windage and elevation from the back end as opposed to getting out of position to make adjustments to the front rest.

In the course of shipping and packing, parts may end up missing or damaged- call us at 631.673.5975. 8:30 a.m. - 5:00 p.m. Eastern Time. We will promptly send replacements.

Introduction

IT WOULD BE A GOOD IDEA TO READ THIS ENTIRE MANUAL BEFORE USING THE REST!

ALWAYS WEAR APPROVED EYE AND HEARING PROTECTION WHEN USING THIS DEVICE

This rest was designed as the companion to the #30195 Bench Beast™ Joystick rest to form a fully integrated shooting platform. The rest allows serious shooters to maintain precise cheek weld, eye relief and sight picture and at the same time make fine adjustments to windage and elevation from the back end, rather then getting out of position to make those adjustments at the front rest. These same attributes also make it an excellent front rest for precision, long range and F class shooting.

Both windage and elevation controls are ambidextrous. Operating the elevation controls engages a compound scissors mechanism. The advantage to this design is that there is never any creep or drift. Wherever it is set it stays and no secondary lock up is required. In addition, since it rides on 20 mm linear motion bearings the function is liquid smooth. The windage controls move the upper platform from side to side. The platform rides on 10 mm linear motion bearings and is moved by a screw mechanism that allows precise positioning.

- Positive Non-Slip Elevation
- Factory Filled Leather Rest Bag
- Magnetic Spirit Level
- Ambidextrous Windage & Elevation Controls
- Weighs 25 lbs

As Shown As A Front Rest

The rest requires no assembly. Simply screw the leveling jacks into the base. Now put the rest bag on the top platform and you are ready to go!

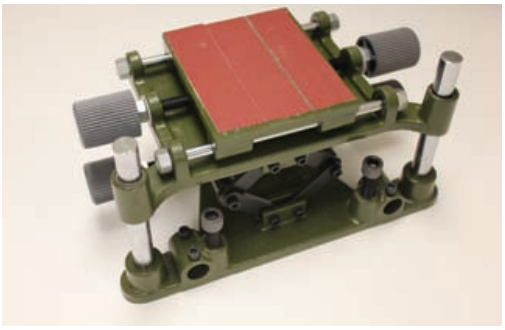
As Shown As A Rear Rest

Turn the lower set of knobs to elevate.Turning the upper set of knobs adjusts windage by moving the platform side to side.

Use the #30201 (optional purchase) connecting rods to fit 2 rests together to make an integrated shooting platform.

REST BAG TRACTION

Different competition rules specify how a rest bag may or may not be anchored. If a rest bag is allowed to be anchored, shooters have a range of ideas on the best way to accomplish this. With that thought in mind the #30195 Rest has a smooth platform surface, but the bottom of the rest bag supplied is rough suede leather. Our suggestion for increasing the traction between the rest bag and the rest is to use plumbers emery cloth (this is readily available at home improvement centers in the plumbing section, and it is typically 1.5" wide by several yards long and it has a durable cloth backing), and rubber cement. Any type of contact cement will do, but we choose rubber cement because it is easy to work with, easy to clean up, and provides an excellent result. The common brand is Elmer's and it is available at any stationery supply store. There are 2 ways to apply rubber cement: The first, which we do not recommend, is to apply it to one surface, press the 2 surfaces together and wait for it to dry. The other way, which we recommend, is to coat both surfaces, this means the back side of the emery cloth and the top deck of the rest with rubber cement and allow it to completely dry. After it is dry simply place the emery cloth in the exact location that you want, press it in place and it will stay. If, some how you have located the emery cloth incorrectly you can simply peel it off and relocate it.



This is the result after the application of the emery cloth to the rest. It provides excellent traction. Of course, you can use any type of sandpaper, but it would not be as durable.

These are your basic raw materials:
Elmer's Rubber Cement, and
Oatey or Lenox Plumber's Emery Cloth.

A WORD ABOUT ACCURACY

When it comes to shooting, the word "accuracy" really refers to group size. Once the group is established, adjusting the sights to move the point of impact to the point of aim is a simple task. A gun/ammunition combination that shoots to 1, 3, or 5 MOA is just that. No matter what device you use to support the gun that group size will not change, not to mention extraneous factors such as sighting device, wind, stability of the shooting platform, trigger pull, parallax and/or the shooter. There is a long list of factors that can affect group size. Below we have attempted to briefly address a few of the more common ones. All comments are made with the "all things being equal" and "under perfect conditions" provisos. Please consider this a general guide that might point out a few things that might not have come to mind. Our #30185 Black Gun™ Machine Rest, #30003 Precision Rifle Rest and #30088 DLX Precision Rifle Rest are designed to produce repeatable results. If the rests are properly assembled, securely anchored to a bench that is rock solid and does not shift under the stress of recoil, you will be able to maximize repeatability. Each rest will consistently repeat well under 3 MOA. What this means is that if the gun/ammunition combination is capable of shooting groups of less than 3 inches at 100 yards (nominal 3 MOA), you will be able to realize this degree of repeatability with either rest. The big word in the previous sentence is "IF". No rest will make a 3 MOA gun place all of the bullets in one hole. The group will still be 3 MOA. If your bullets are not all forming a tight group, there is a high probability that the problem is a result of the gun, ammunition and/or the sight.

* MOA – Minute of arc – A circle has 360°, each degree has 60 minutes, i.e. 1/60th degree. 1.0 MOA is exactly 1.047 inches at 100 yards.

CENTER FIRE ACCURACY

A large percentage of the rifles, old and new, in the hands of American sportsmen will not shoot much better than 2.5 MOA with exceptional guns shooting 1.0 – 1.5 MOA, (assuming the ammunition is correctly matched to the gun). The average deer rifle, using popular brand, off the shelf ammunition is probably capable of 2.5-3.0 MOA because the gun and ammunition manufacturers know that a typical white tail is statistically harvested at a range of less than 100 yards, and a gun that places the bullets within 3 MOA will easily place all of them within the kill zone. Manufacturing guns and ammunition that will shoot under 1 MOA is, of course, done every day, but there are only a few manufacturers that guarantee that result, and then only with ammunition that they specify. The costs associated with the manufacturing, quality control, and attention to detail, price these guns out of reach of a large part of the market. With that being said, a gun/ammunition combination with 3 MOA accuracy, properly sighted in, will usually get the job done and nobody will know the difference. The target is dead –end of story. The point here is that if your gun is shooting at or beyond 3 MOA, the issue is, in all probability, a combination, of factors that can affect accuracy. We have prepared a short list of issues you may want to consider in examining the group size of your rifle.

A. Bolt action sporting rifles are by nature and design typically more accurate than pump, lever, or semi-automatic rifles. The reason for this is the bolt action tends to be much more rigid, and therefore flexes less. In addition, a bolt action usually has a larger and stronger extraction mechanism, which means the chamber can be made to closer tolerances than other types of actions. Believe it or not, not all ammunition in the same caliber is made to the exact same dimensions by all manufacturers. For example, SAAMI (Sporting Arms and Ammunition Manufacturers Institute, www.saami.org publication ANSI/SAAMI Z299-1992) allows a variance of up to -.008 under the standard for diameter, and up to -.007 under for the standard distance from the base to the shoulder (this determines headspacing) for center fire 30-06 ammunition. (Variances across most calibers are similar.) The extraction mechanism in pump, lever, and especially in semi-automatic weapons must be able to consistently and effectively extract cartridge cases at a rate equal to the cyclic rate of the weapon using the entire range of commercially available ammunition. This can be problematic if the cartridge fits too tight in the chamber. As a result manufacturers tend to make these chambers more tolerant of ammunition that may tend towards the larger end of the size range. Conversely, if ammunition manufacturers want their product to function in guns typically in the hands of sportsmen, they must also consider how easily the cartridge seats and extracts. Needless to say, there are exceptions to this, but as a rule as you move away from a precise cartridge chamber fit accuracy suffers. This is especially apparent in military weapons because they must chamber ammunition from various sources (therefore with various tolerances) and must function even if the ammunition is corroded or dirty. Reliability, not pinpoint accuracy is the primary criteria.

B. Match the correct bullet weight to the twist of the rifling. This is one of the most commonly overlooked factors that determines group size. If the bullet length and twist rate of the barrel are not synchronized, accuracy will suffer. A 110 grain .308 bullet is, of necessity, shorter than a 220 grain .308 bullet. For proper stabilization the heavier, and hence longer bullet, requires a faster rate of rifling twist than a short, light bullet. Further to this point, different guns respond differently to ammunition from different manufacturers. The point here is that you should test fire ammunition from several manufacturers and select bullet weights that are compatible with the rate of twist of the gun's rifling. Generally speaking, twist rate is stamped on the barrel or the information is available from the manufacturer. You need to test different bullet weights to optimize results.) The following websites will give you more information regarding this issue:

www.snipercountry.com/hotlips/twistrate.html
www.uslink.net
kwk.us/twist.html
en.wilkipedia.org/wiki/rifling
www.gsgroup.co.za/cip.html

G. Parallax is the apparent shift of the target relative to the reticle due to the horizontal movement of the observer. Scopes with parallax adjustments must be correctly adjusted. Scopes without a parallax adjustment are generally range specific for parallax free sighting. If you have made the adjustments to eliminate parallax you are good to go.If not, it is important to make sure that the longitudinal optical axis of the scope that runs through the center of the crosshairs is directly aligned with the pupil of your eye. If you have an inconsistent cheek weld to your stock or fail in any other way to address parallax your groups will suffer from horizontal dispersion, i.e.: open up left to right. This will happen because your view of the target in the horizontal plane will vary with each shot.

H. Barrel temperature plays a major role in maintaining group size. As a barrel heats up torsional stress will cause the barrel to twist. Bench rest shooters wait several minutes between each shot to keep the barrel from overheating. If you fire 10 or 12 shots in rapid succession from a sporter weight barrel your groups will expand.

I. Other factors, which we will not explore here include: Free floating barrels, bedding, barrel harmonics, etc.... - Not to mention the shooter!

RIM FIRE ACCURACY

(Some of this applies to center fire rifles also.)

Accuracy in a rim fire rifle is to a large degree more dependent upon the ammunition as opposed to the equipment. Center fire ammunition can be loaded and/or reloaded to precise and consistent specifications. Rim fire ammunition can only be loaded at the factory level. Since rim fire ammunition is not re-loadable, it is necessary to use whatever is commercially available. Factors affecting rim fire accuracy are:

A. As with a center fire cartridge there is a SAAMI specification (ANSI/SAAMI Z 299.1-1992) and variance for the dimensional aspects of rim fire ammunition that allows up to -.004 under the standard diameter for .22 long rifle match or sporting ammunition. Consequently, manufacturers make ammunition within the entire range of this variance. As a direct result a gun that is expected to perform reliably must be able to accept the full range of available ammunition. What this has led to are guns that are match chambered which are invariably bolt action. (The chambers in these guns have a tight precise cartridge fit and the guns perform best with match grade ammunition that is made to close tolerance), and then we have most other guns that have sporting chambers, many of which are auto loaders. The chambers in these guns must be made large enough so that the gun will cycle correctly with any off the shelf brand of ammunition which could be manufactured to any size within the allowable range of tolerance. i.e., This means the cartridge may fit loosely in the chamber. Due to gravity the cartridge settles into the lowest portion of the chamber. The result is that the center axis of the chamber, and hence the center axis of the barrel is not aligned with the center axis of the bullet. This means that the bullet will engage the rifling off center and will travel down the barrel and exit the muzzle at an angle resulting in a loss of stability and accuracy.

B. Concentricity – If the long axis of the bullet is not concentric with the long axis of the case it will also not be concentric with the long axis of the bore, as above the bullet will travel down the barrel and exit the muzzle at an angle with similar results. As little as .002”–.003” off center will cause a noticeable enlargement of the grouping.

C. Head Spacing is the distance the bullet must move from the casing until it engages the rifling. In a rim fire this is controlled by the thickness of the rim. According to SAAMI standards rim thicknesses may vary from as little as .036” to as much as .043”. A gun may perform much better with one rim thickness as opposed to others. It therefore important to test your gun with a wide range of ammunition. Typically in a box of inexpensive ammunition is you will find a considerable variance in rim thicknesses. This will usually result in expanding the group size; consistency of rim thickness will result in smaller, consistent group sizes. Both concentricity and rim thickness can be measured by using the HYSKORE® #30075 Ammo Analyzer.

D. If the group spread is more vertical than horizontal it is usually the fault of the ammunition. At a known distance, a faster bullet reaches the target quicker and drops less, i.e. gravity has less time to act. As you may appreciate, the small quantities of primer and propellant used in a rim fire cartridge must be precisely and accurately measured in order to produce consistent velocity. Only a small variance in absolute terms translates to a significant percentage variation and by extension, variation in velocity. Maintaining this type of consistency across large production runs is incompatible with maintaining low cost. Primer compound has an explosive force in the magnitude of 25 to 50 times that of the propellant. As little as 1/10 grain (1/70,000 lb.) deviation will cause a velocity differential. With these thoughts in mind, the culprit in groups that open top to bottom is almost always inconsistent velocity. The faster bullets strike higher and the slower ones lower.

E. Scope Problems – See “F” and “G” under Center Fire.

The aforementioned issues represent a brief synopsis of various conditions that may affect accuracy. There are numerous in depth studies that can provide detailed analysis of each situation. We are not experts and do not intend to be. Our comments and suggestions are the result of studying and compiling data from a wide range of sources. Furthermore, we have only touched on the more significant factors that affect accuracy. If you elect to make adjustments to your gun/ammunition combination to increase accuracy, we suggest that you address each issue one at a time. Do not try to make multiple corrections at the same time as you may contaminate the results, and possibly obscure important issues that need further attention.

• REPLACEMENT PARTS •

These are replacement parts for purchase. Pictures do not represent contents of set.

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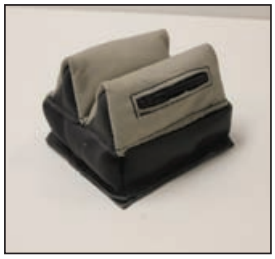
30196 - 2

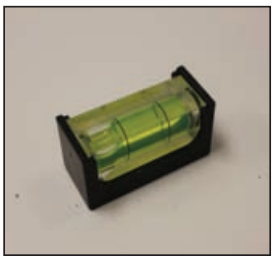


30195 - 18

30195 - 20

30201

30088 - 6



Parts List & Pricing:

30196 - 1	Leveling Jacks - 3 pcs	$ 10.00
30196 - 2	Leather Rest Bag	$ 20.00
30195 - 18	Windage & Elevation Knobs - 4 pcs	$ 15.00
30195 - 20	Socket Head Cap Screw Set - 24 pcs (8) M5 x 10 & (16) x M5 x 20	$ 7.50
30201	M-20 x 60 cm Connecting Rods - 2 pcs	$ 50.00
30088 - 6	Magnetic Level	$ 7.50

These are replacement parts for purchase. Pictures do not represent contents of set.

Visit Our Website For More Information or to Check Out Our Other Great Shooting Accessories: **www.hyskore.com**

Send Check or Money Order with Phone Number to:
Power Aisle, Inc.
P.O. Box 983
Middleburgh, NY 12112
NYS Resident add appropriate Sales Tax

** $10.00 Shipping & Handling to Lower 48 States**
** $25.00 Shipping & Handling to Alaska, Hawaii, Puerto Rico**

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** Shown with the (optional) #30195 Joystick Rest and the #30201 Connecting Rods*

Two Can Be Linked Together To Make An Integrated Shooting Platform