

Evaluation of the Anthon DSD-30(viously the DSD-25) Double Stop Descender

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OVERVIEW

The Anthon Double Stop Descender (DSD-30) is a unique rappelling device designed and produced by the Anthon Company of Izola, Slovenia. This descender features two protruding “lobes,” one on the handle and another on the rope holder, that give it excellent stopping capabilities. The descender is 190-mm long, 76-mm wide, and 25-mm thick, and has a mass of 340 grams. The DSD-30 has a working load of 340 kN (~900 lbs force).



Figure 1. Anthon Double-Stop Descender (DSD-30) in use. Photo by Bob Kirk.

I evaluated the Anthon DSD-30 in a variety of conditions including above- and below-ground drops. Above-ground evaluation was done on a rappelling tower and in-cave evaluations were conducted on 4 separate drops, each repeated approximately 8 times over the course of several months. Rappelling tower drops were 15', 20', and 30', and in-cave drops were 45', 17', 25', and 30' in depth, respectively. Three different thicknesses of kernmantle rope were rigged on these drops including 5/16", 7/16", and 9 mm. Ropes ranged in age from new (clean, pliable) to old (~10 years, very stiff, very dirty). Finally, the drops included ideal rigging situations on the rappel tower, in-cave rebelay, tight rigging conditions, and exposed rigging conditions.

The Anthon DSD-30 used in this review is shown in Figure 1 rigged for double-stop capabilities. The descender may also be rigged for “single-stop” as well (see Figure 4). A French Wrap was used during trials for an added safety feature and to become comfortable using the wrap as a backup.

PERFORMANCE DURING IDEAL ABOVE-GROUND RAPPELLING CONDITIONS

Above-ground rappelling trials of the DSD-30 were conducted on the WVACS Rappelling Tower¹. Rappels were made from heights of 15', 20', and 30' above the ground on supple 9-mm and stiff 7/16" ropes. The device was rigged using the double-stop rig and single-stop rig with French Wrap backup. Figure 2 shows a close-up of the double-stop rigging diagram located on the rappelling device. Figure 3 shows the descender used with the French Wrap.



Figure 2. Diagram for double-stop rig of DSD-30 Descender. Photo by Aaron Bird.

Double-stop rappels on 9-mm rope were easy to control and smooth. Upon squeezing the handle of the device, there is a fine "middle" point between each of "stops." Maintaining this middle point with supple 9-mm rope is easy and intuitive. Upon releasing the handle, the device immediately stops the rappeller. Squeezing the handle into the device also immediately stops the rappeller. For rappels on old, stiff 7/16" rope, the double-stop rig proved slow and somewhat difficult. Feeding rope into the device from below is relatively unsuccessful so bouncing was necessary for rappelling when using the double-stop rig with the older ropes.

Single-stop rappels on 9-mm rope were fast. Having the French Wrap as a backup was a blessing. Even with good control and a backup, single-stop rappels on 9-mm diameter rope or smaller can be dangerous! Single-stop rappels on stiff 7/16" rope were smooth and easy to control. In the single-stop rig, the device stops when released, but not when tightly squeezed because there is no safe "middle point." Single-stop rigging of the DSD-30 is somewhat similar to other descenders in that the hip or leg can be used for added friction. Single-stop rigging should be used with caution on small diameter ropes, and with a safety backup, i.e. bottom belay or French Wrap.

¹ WVACS is the abbreviation for the "West Virginia Association for Cave Studies," which has a cave research field station near Frankford, WV. 2



Figure 3. Using Anthon in double-stop rig with French Wrap safety. Tom's Drop, Zicafoose Blowhole, WV. Photo by Bob Kirk.

PERFORMANCE DURING IN-CAVE RAPPELLING CONDITIONS

In-cave rappelling trials of the DSD-30 were conducted in Zicafoose Blowhole (ZBH), a cave in West Virginia, United States, currently being explored and mapped. The cave has a number of tight squeezes and narrow canyons including drops with very cramped conditions at the tops. The bottoms of all pits are open and relatively roomy.

During exploration of the near-entrance passages in the early 1990s, 7/16" kernmantle caving ropes were rigged at all drops except the first, which was rigged and derigged for each trip. The ropes in the cave were used for approximately 15 trips over the course of about two years. The cave is dry in the winter when it sucks in cold air from the outside, but somewhat muddy in the summer time when it is blowing out cool moist air from deep within the cave. During the period of time when the in-cave ropes were used, they became very mud covered and experienced a decade of drying and moistening before they were used again recently when exploration and survey resumed in winter 2003.

The DSD-30 descender was used on one of the drops (25') originally rigged in the 1990s using the single-stop descender rig (see Figure 4). It was difficult bending the stiff rope enough to put it into the descender and after going over the lip, feeding and bouncing were necessary to get started. After rappelling a few feet, however, descent was smoother.

After the initial return trips to reassess the cave, all of the ropes in the cave were replaced with new 5/16" and 9-mm ropes. Rappels conducted on these ropes using the double-stop rig were easy to control. Plus, the double-stop feature of the descender provided the benefit of being able to let go of the mainline at any time. This is not a standard practice in most rappelling circumstances. However, in ZBH there are rather difficult rigging conditions, so when large and heavy packs are brought, having both hands free to maneuver packs and other equipment is a much more efficient process and increases the safety level. Through the winter of 2003 and into the summer of 2004, the DSD-30 was used on four separate drops at least 8 times each and the device performed exceptionally, whether using the double- or single-stop rig.

As the weather changed, the outside temperature began to increase and by middle to late spring, the airflow in ZBH had reversed. This resulted in cool moist air being sucked from deep within the cave and blown out the entrance. Over the course of approximately two months, the normally dry portions of the cave became rather damp, so that dried mud on the walls and floor of the cave became wet and sticky. This mud was tracked through the cave on the explorers coveralls and cave packs and subsequently began to build up on the ropes making them stiff.

Use of the DSD-30 in these conditions necessitated rigging with the single-stop rig in order for descents to be smooth. A "look-ma, no hands" approach was still possible, but care was taken to ensure that there was no "creeping" down the rope, especially on smaller diameter ropes.

CONCLUSIONS

The Antron DSD-30 descender is light, easy to use, and provides smooth rappelling on supple ropes of 7/16" or less in diameter. The descender is very compatible with the Frog ascending system and is conducive to use in caves that have rebelay and difficult rigging. The descender does not perform as well in extremely muddy situations and care must always be taken when the device is used in the single-stop rig manner. For safety purposes, the best use of the descender is in the double-stop configuration, and the rappeller should not get

into the habit of using hands-free maneuvering unless absolutely necessary.

I believe the best situation where the Anthron DSD-30 could be used is in teaching people how to rappel. This device, when properly rigged and used, is very safe. In addition, the double stop capability allows a beginner to focus only on getting down the rope by squeezing on the handle until the “middle point” is found. Rappelers don’t have to worry about which side of their body the rope goes over and how much friction to apply against their back or leg or how to move the bars of a rappelling rack. Also, in the double-stop rig, a bottom belay becomes much more effective, if needed, due to the lobed design of the rope holder, which is pulled further into the device as more force is applied on the rope from the belayer below. For the more experienced user of the Anthron DSD-30, bottom belays may be



Figure 4. DSD-30 rigged in the “single-stop” manner on old 7/16” kernmantle rope. Photo by Bob Kirk.

eliminated -provided the trainer feels this is appropriate- because the likelihood of an out-of-control rappel is extremely small in comparison to other descenders. Finally, one of the most important features of this descender is that it does not have to be removed from the rappeller’s harness to be attached to the rope, and once attached, can not be detached from the rope until it is unloaded and the rope holder is physically opened.

Personally, my descender of choice has been a rack. I’ve also used other descenders, including Whaletails, SkyGenies, spools, bobbins, etc. The Anthron DSD-30 is somewhat like a bobbin, but with a much better design due to the double-stop “lobes” and its relatively small size. In fact, I believe the DSD-30 is the single most sophisticated descender I have ever used. I did not test it on

long drops, so I do not know the longest drop it will handle. Since it is of the “bobbin class” of descender, I believe it could be used by a highly experienced vertical caver for drops of up to 200’. Again, personally, I like racks because they’re so versatile, and for what I consider longer drops, i.e. 150’+, I’ll be using a rack. However, for the vast majority of caving I do, the Anthron DSD-30 will get me to the bottom safely and efficiently. I would recommend this descender to any vertical caver interested in trying a new rappelling device.

PROS and CONS of the Anthron DSD-30 Descender

PROS

Light and compact -- will easily fit in a cave pack and hang neatly from a caver’s harness

Safe -- double-stop rig means that the descender will stop when released and stop when squeezed... descent occurs when the “middle point” is found

Compatible with Frog -- easily fits into the motions of rebelay and change overs that a Frog ascending system is well suited for

Good for beginners -- easy to operate

Has a rigging diagram -- the double-stop rigging diagram is engraved into it so users will always know how to attach it to the rope

CONS

Cost -- price for the DSD-30 can be as much as \$100 US

Not a variable-friction rappelling/lowering device -- this descender is not a variable-friction lowering device, so it shouldn’t be used for rescue lowering, although it will resist (hold up) the force of several large men (~900 lbs of force)

Useable only on 7/16” or smaller ropes -- works best on clean 5/16” or 9-mm ropes

Poor performer in very muddy conditions -- mud can become lodged inside the rope holder and increase friction

Potentially dangerous for smaller ropes -- when rigged in single-stop manner... however, double-stop rig is safe

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