

# Spotlight on the Singletree

First, what is a singletree? It is a part of a carriage that, when the harness traces are properly attached, moves back and forth with the movement of the horse, reducing any friction caused by the harness. In British vernacular, it is also known as a swingletree.

There are a few different types of singletrees, but we will focus on the ones typically used by beginners on simpler vehicles, the Hook End and the Sword End. The hook end singletree is just as it sounds, it has hooks on the ends to which the slot-end harness traces are attached. With a typical wood Hook End singletree, the slot in the trace hooks over the back of the hook first and then is pushed over the front of the hook. To remove the trace, the process is reversed. This type of singletree is measured wood-to-wood and the hooks add an inch to each side. There is a front and a back to a Hook End singletree. The longer, rounded part of the hook is always mounted towards the back of the vehicle.



*Hook End singletree*

The Sword End singletree is all wood, measured simply end to end, and is narrowed on the end so that the slot-end trace slips *around* the wood. This type of singletree requires a method of attachment so that the trace does not slip off the end of the wood by accident. This can be as simple as two holes in the end of the singletree with a piece of rawhide knotted on one end underneath the inside hole. The trace is placed between the two holes while the other end of the rawhide goes over the trace and is slipped down into the outside hole.



*Rawhide trace attachment.*



*Trace attached correctly on a Sword End singletree.*

The other method of holding the traces on a Sword End requires hardware attached to the top of the singletree. A typical mistake made by beginning drivers is to use the trace holder hardware itself to attach the trace. The trace ALWAYS needs to slip *around* the wood with the hardware holding it from slipping off the end of singletree. No hardware on a Sword End singletree is strong enough to withstand the pressure applied by the trace on a pulling horse and will break. (We've seen it done.)



*Trace attached incorrectly. The hardware WILL break if the trace is attached this way.*

In some cases, the slots on some traces are not wide enough to slip around the wood. This can be remedied by either sanding down the ends of the singletree or making the slots wider. Also, these trace holders should be stored in the down position (left). If consistently left in the up position (right), it can stretch or break the spring inside, rendering the trace holder useless.



*Trace holder incorrectly left up.*

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Some metal singletrees have rings or holes. These are meant for snap shackles and ring-end traces. The snap shackles mount to the vehicle singletree and the rings on the traces snap to the shackles. Snap shackles are designed to be able to be released even when under pressure. Some people will put a small thread of rawhide or the like on the pull ring of the shackle to be able to grab quickly in case of emergency. When using snap shackles, it is highly recommended they be high quality and weight rated. Regular cheap snaps are inappropriate and can cause an accident when they break.



*This metal singletree requires snap shackles and ring end traces.*

Other metal vehicles have metal singletrees with various ends. Some have “pigtail” ends that curl around on which the trace slot is slipped. Because these require some twisting of the trace, it is advised that you pay attention to how you put the trace on the pigtail so that the trace is not twisted once it is attached. Do not use ring-end traces with a pigtail end singletree.

If you need to replace a wood singletree, there are a few things to know. First, they come unfinished, and you will need to protect the wood somehow just like you would protect wood furniture or fencing. Without either paint or some sort of sealant, the wood will rot prematurely. If you plan to stain and varnish a Hook End singletree, do that first before you prime and paint the metal ferrules on the ends. The hooks themselves are not painted. In the US, singletrees are generally made of hickory, which breaks clean instead of splintering. Hickory may stain unevenly because of the variation in the wood.

Singletrees are attached using a bolt. We highly suggest replacing any bolt that shows signs of wear. With a typical singletree, it means using a Grade 5 carriage bolt, usually available at any hardware store. It is generally understood that a Grade 5 bolt will bend before it breaks, allowing you the opportunity to save yourself before everything breaks loose. Grade 8 bolts are more likely to sheer under pressure but are technically supposed to be able to take more pressure than a Grade 5 bolt. (Of course, if you do a quick web search you will find differing opinions on all that as well.) We had a squeaky singletree that it seemed no amount of silicone spray would fix. For some reason, we decided to take the singletree off and low and behold, the Grade 5 bolt was bent. We replaced the bolt and the squeak went away. (Yea!)

If you have a vehicle where the singletree is mounted on top of the cross bar or the like, you will want to use something to



*Tee plate mounted under a carriage bolt.*

protect the bolt from pulling and stretching the wood, loosening the hole. This can be a singletree wear plate, a tee plate, or simply a washer, but we highly recommend either of the prior methods over the washer. Using a wear plate or tee plate with a square hole will also help the carriage bolt fit securely into the hole and keep it from turning.



*Brass wear plate mounted on top of the singletree to support the bolt.*

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*Castors mounted under the singletree.*

Many vehicles use a caster set underneath the singletree. One part is attached to the bottom of the singletree while the other is attached to the cross bar. In smaller vehicles, this will actually raise the height of the singletree and may cause the traces to run “uphill” from the collar to the singletree, creating a less than ideal draft attachment. We have used washers in this case in lieu of casters to help reduce this possibility. We have also undermounted the crossbar to the shafts so that the singletree is actually inside the shafts, keeping the traces more level from the horse’s collar. Typical casters can also be

a larger width which will stick out beyond the edges of a smaller length and diameter singletree. There are some pony-sized casters available for the smaller singletrees if you deem to use them.

On some metal vehicles, the singletree bracket is U-shaped, meant for the singletree to fit between the metal. In this case, the wear plate and casters are not needed, and a regular hex bolt can be used. The biggest concern here when replacing your singletree is that the new wood fits in between the top and bottom of the bracket. You may have to measure it and double check before purchasing a new singletree. If the bracket is much larger than the singletree, you may need to add some “filler”, such as washers, to the bottom of the singletree so that you don’t have any wobbling up and down. Bending the bracket to squeeze it together or widen it could weaken the metal.



*Metal vehicle with a U-shaped singletree bracket.*

When securing the singletree bolt to the vehicle, we use what is known as a Nyloc, or nylon locking nut. It has a nylon insert that increases friction to help hold the nut from loosening. We recommend that if you take a Nyloc nut off your vehicle, you replace it with a new Nyloc nut. A flat washer on the underside of a wood crossbar will also help keep the nut from sinking into the wood. A lock washer is put on next, followed by the Nyloc nut. The Nyloc nut should be tight enough that the singletree does not wobble, but loose enough to move freely with the horse’s shoulders. As you use your vehicle, it is a good idea to regularly check your singletree to feel if it is wobbling, which means that the singletree bolt needs to be tightened.



As briefly mentioned above, a squeaky singletree (and most other wood-on-metal and metal-on-metal squeaks) can be alleviated with a bit of silicon spray. We like silicon spray because it is less likely to attract dust and dirt than more oily sprays. If your horse is not attuned to the sound of aerosol behind him, it is a good idea to not spray the squeaks on your vehicle when he is put to it.

Finally, you will need to attach some singletree straps, which we have addressed in our Singletree Straps article. By monitoring and maintaining your singletree, you can help ensure that all your drives can be safer and more comfortable for you and your horse.