Tundra Nannies

		TRAC	A-TRAC	LSD	VSC	Comment
2wd	Normal	on	----	off	on	power cut
	1 push	off	---	on	on	no power cut
	1st 3 second push	off	---	on	off	no power cut
	2nd 3 second push	off	---	off	off	no power cut
4wd HI	Normal	---	on	off	on	power cut
	1 push	---	off	off	on	no power cut
	3 second push	---	off	off	off	no power cut
4wd LO	Normal	---	on	off	off	power cut
	1 push	---	off	off	off	no power cut

Firstly this info is from this post by KevinK – So he deserves the credit.
https://www.tundras.com/threads/traction-control-everything-you-want-to-know.21697/

This info can be accessed here as well - https://t.me/ToyotaFSM/269

How & When to use Toyota Tundra 2nd Gen (2007-2021) Traction System –

When to use what - Pick your poison :)

Scenarios of Use

Deep Mud, Snow, Sand
Already stuck or high possibility (maybe you've seen someone else stuck here or you know it's deep)
4HI - Push and hold for 3 seconds ("Traction Control OFF" light on, "VSC OFF" light on). This will allow all wheels to spin when they lose traction which allows the tires to clear the mud or snow out of the tread and gain grip as it hits the snow or mud again. In this case spinning of the tires is helpful in 'flinging' the debris out of the tread so they don't become smooth butter balls. The engine won't cut power.
4LO - One Push ("Traction Control OFF" light on). Puts the truck into the same mode as the 4Hi setting above and allows the tires to spin at speed, clearing mud and snow from the tread.
Tire pressures - dropping to about 15 psi of tire pressure in the snow and sand will create a larger footprint for the tire to grab with. High speed handling will be imparied - don't be a dipshit and go flying around the trails and streets on these new marshmallows.

Slick Mud, Snow, Ice
Just driving along, not too deep
4HI, 4LO - Normal (no buttons pressed, no dash lights on) = Truck will detect wheel spin and retard engine timing along with application of the brakes to the spinning wheel as needed. Vehicle Stability Control is on (4HI only. Off by default in 4LO). ATRAC is on.

Hill Climbing -

4HI and 4LO - No button push (A-TRAC will be active). This mode allows the truck to lock up individual wheels as they lose traction during the climb. This is particularly helpful in cross-axle situations where one front tire is in the air, and the opposite rear tire is also in the air (from the back your axles look like an X). Keep steady on the throttle between 1800-2200 rpm and don't press the brake pedal unless you need to stop. The old trick of powerbraking used to be handy on older vehicles with open diffs - don't do that with your Tundra in A-TRAC as it will pause functioning.

Loud Noises and Blinky Lights! You may hear the system working and it may sound scary at first. There will be some Tick, Tick, Tick noises from under the hood and at the wheels, and possibly the squealing of brakes - this is the sound of technology at work. The AutoLSD light flashes when A-TRAC is active - bask in it's warm glow.

Tire Pressures - Dropping to 20-25 psi will provide a better footprint on regular dirt and still have a firm enough sidewall that you can go a decent speed in the dirt. Don't do 90mph emergency lane changes at this tire pressure on the street.

Hauling Ass in the Dirt -

2WD, 4HI - Probably best to not push any buttons as the nannies can help keep you in a straight line. But, if you're adventurous, turning traction control off will allow slides and drifts. Enjoy at your own peril - it's my preferred mode off road.

I bought a 2WD but still wanna have some offroadage –

2WD in a tundra can get you a long way down the trail and can improve your driving skill immensely (ie. selecting lines based on keeping both rear tires relatively level). In this case AutoLSD is your friend. The same RPM range applies, and it will make some ticking noises when it's working. It must see at one wheel spinning. Most people make 2 common mistakes.

1. Rrrrrr… I'm stuck and let go of the throttle = not long enough for the system to see the need, so it never kicked in.

2. Hold my beer BRRRRAAAAWWWWRRAAAWWWRRA BRAP BRAP BRAP BRAP… It didn't work AutoLSD is crap. Too much skinny pedal Einstein... Gotta keep it between 1500-2000 rpm and let the free wheel spin. The light will blink and there will be tick tick tick noises and Viola you're scooting along.

2WD Sand - You should invest in some traction boards with all the money you saved on initial purchase price and the improved fuel economy. If you're stuck, stop spinning - you're just making more work for yourself. Put it in park and don't freak out unless the chupacabra, Bigfoot or other applicable regional monster is after you (probably should also invest in some personal protection gear within the laws of your state - sorry Cali you're fucked).

Find a destination with solid ground (hopefully not too far in front of your truck). Get the traction boards setup properly and leave all the nannies ON. If you spin tires on your traction boards it will destroy them, so use a soft throttle input.

If you are really stuck deep, don't let a bro-dozer use a regular tow strap or chain to yank you out, they don't stretch and its a huge shock load. It's the equivalent of nipple clamps on your wife/gf and you get a running start moving away from them… it ends with something broken on

either truck (or on your wife/ gf and you depending on where it was, ahem, connected…) Get a proper kinetic rope and learn how to use it. There are many out there now that are downright affordable… ok 2WD rant off

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Here's how Toyota have enabled us to keep traction in slippery situations.

ABS - Antilock Braking System. Prevents wheel lockup during braking to keep control over directional changes while braking hard or in a panic situation. A modern 4-Channel ABS system can individually brake each wheel as needed, and monitors all four wheel speeds in relation to each other. The ABS is always "ON". You cannot (conventionally) shut it off.

TRAC - Traction Control helps maintain traction on wet, icy, loose or uneven surfaces. When one of the wheels begins to slip, TRAC applies a wheel brake individually to the tire without traction and reduces engine output to help assist the driver with control of the vehicle in a straight line.

ATRAC - Or A-TRAC, this is Toyota's Active Traction Control. It applies the brakes to stop a spinning wheel. Can also retard engine timing to reduce power applied to the driveline (to prevent breakage of driveline parts). When loss of traction is detected the wheel slip light flashes and you'll hear ticking noises until traction is returned. ATRAC is defaulted to "ON" when the truck is started in any drive mode (2WD, 4HI, 4LO). (as identified by @Clay Grazer, TRAC is the 2wd term and ATRAC is the 4wd term, but they function the same, so the terms are used interchangeably here)
Special Note: If you hit the brake pedal while ATRAC is actively working, it shuts off. It will start working again when you release the brake pedal.
Even More Special Note: Hold the rpms consistently from 1800-2200 rpms. That is the sweet spot of ATRAC. If you hit the pedal harder, ATRAC thinks you are trying to get unstuck from deep mud/snow and releases brake pressure and allows maximum wheel spin to free the vehicle. It also protects the driveline/transfer case/axles/ differentials and braking system/rotors/pads from being over stressed from the high torque of the motor. If you reduce the throttle during a climb and the RPMS drop below 1800, the system stops locking the wheels.
Super Special Note: A-TRAC only works if at least one tire has traction. On a sheet of ice where all 4 tires are on ice without traction, from a stand-still, climbing an incline, the only thing you can do is give her the beans and build some momentum. Good luck.

VSC - Vehicle Stability Control. Uses the ABS sensors along with steering wheel sensor and yaw sensors to determine if the vehicle is not following the path intended by the driver. Will apply brakes and cut throttle to "steer" the vehicle back into the intended line of travel. VSC is defaulted to "ON".

Auto LSD - Automatic Limited Slip Differential. The Auto LSD senses wheel speed differences between the two REAR tires only, and lightly applies the brakes to add drag to the wheel that does not have traction. This simulates having traction to that wheel and forces equal amounts of power to both sides of the differential. If the initial light pressure does not work, the system will gradually apply more "drag" to that wheel to help send power to the other side of the axle. It does not cut power from the engine. Auto LSD only works in 2wd, and is defaulted to "OFF".

When to Pushing the Buttons (Table on the top)

In 2wd:
Normal (no buttons pressed, no dash lights on) = Truck will detect wheel spin and retard engine timing along with application of the brakes to the spinning wheel as needed. Vehicle Stability Control is on. ATRAC is on. Auto LSD is off.

One Push ("Auto LSD" light on) = Same as Normal, but with the addition of the Auto LSD function. Auto LSD overrides the ATRAC function, so the truck does not cut power from the engine. VSC is still on.

One Push and Hold for 3 Seconds ("Auto LSD" light on, "VSC OFF" light on) = Same as One Push, but without VSC functionality.

Second Push and Hold for 3 Seconds ("Auto LSD" light off, "VSC OFF" light on,"Traction Control OFF" light on) = No functionality of the ATRAC, Auto LSD, or VSC systems. The truck does not intervene when traction or directional stability is lost.

In 4wd High:
Normal (no buttons pressed, no dash lights on) = Truck will detect wheel spin and retard engine timing along with application of the brakes to the spinning wheel as needed. Vehicle Stability Control is on. ATRAC is on. Auto LSD is off (does not function in 4wd.)

One Push ("Traction Control OFF" light on) = Same as Normal, but without the ATRAC function. VSC is still on.

One Push and Hold for 3 Seconds ("Traction Control OFF" light on, "VSC OFF" light on) = Same as One Push, but without VSC functionality. The truck does not intervene when traction or directional stability is lost.

In 4wd Low:
Normal (no buttons pressed, "VSC OFF" light on) = Truck will detect wheel spin and retard engine timing along with application of the brakes to the spinning wheel as needed. Vehicle Stability Control is off by default. ATRAC is on. Auto LSD is off (does not function in 4wd.)

One Push ("Traction Control OFF" light on) = Same as Normal, but without the ATRAC function. VSC is still off. The truck does not intervene when traction or directional stability is lost

More Deep reading if you have time on Toyota 4x4 systems -

Toyota Tundra -
ABS,EBD,TRAC,A-TR