

# Spicer® Controlled-Traction Differential, Wheel Differential Lock, & Limited-Slip Differential

**SPICER®**



**Enhanced Traction Options Make Spicer® Drive Axles the Right Choice Over Slippery or Uneven Surfaces.**



*Spicer® Limited-Slip Differential*

Features	Driver Controlled		Automatic
	Traction Differential	Wheel Differential Lock	Limited-Slip Differential
• Effective traction control for enhanced performance in slippery conditions.	✓	✓	✓
• Available in configurations distinctly suited to your applications.	✓	✓	✓
• Full range of ratios that cover a wide variety of vocational applications.	✓	✓	✓
• The best combination of flexibility, serviceability and spin-out protection.	✓	✓	✓
• In-cab, driver controlled engagement provides flexibility between on/off and off-highway operations.	✓	✓	
• Offered in both the forward rear axle and/or rear rear axle of the tandem to meet specific operating needs.	✓	✓	✓
• Design limits torque flow rather than locking the differential for improved vehicle maneuverability at various vehicle speeds.	✓		✓
• Automatic or permanent engagement for all terrain operations.	✓		✓
• Typical applications include: snow plows, chip haulers, on/off-highway.	✓		✓
• A simple mechanical adjustment offers seasonal engagement for summer/winter type operations.	✓		
• Full locking wheel differential provides maximum traction and improved drivability over slippery and uneven surfaces.		✓	
• Patented wheel differential lube flow system for superior spin-out protection.		✓	
• Backed by comprehensive Roadranger® service support.	✓	✓	✓

# Spicer® Controlled-Traction Differential, Wheel Differential Lock, and Limited-Slip Differential Options

## Traction Option Operation

Both the Spicer® wheel differential lock and the Spicer® driver-controlled traction differential offer effective traction control at the flip of a switch or valve. Because it's driver-controlled, you get maximum traction when you really need it.

The axle differential functions normally when the switch is in the "unlock" position. This provides easier steering and better handling on pavements where enhanced traction isn't critical. Driving is easier and wear and tear on tires and the drivetrain is minimized.

When the going gets slick or sandy, however, spin-out can be a problem. Losing traction under one wheel can mean losing control. You can also wind up going no place and needing a tow. And spin-out can cause severe damage...lube starvation in your differential and sudden shock loads that can hurt the entire drivetrain.

The Spicer controlled traction and wheel differential lock systems can minimize or eliminate these problems.

## Driver-Controlled Traction Differential (CTD)

SINGLE AXLE RATINGS GAWR	TANDEM AXLE RATINGS GAWR
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23,000 lbs. - 26,000 lbs.	46,000 lbs. - 52,000 lbs.
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*Note: Permitted use if axle (including capacity ratings where stated) vary with application and service. Please refer to Spicer Drive Axle Application Approval Guidelines, Item AXAG0200, for detailed application information.*

When the driver moves the switch from "dry" to "slippery" the system engages the CTD's clutch pack into the torque flow path when loss of traction occurs. Compression springs press friction plates to allow the clutch pack to resist spin-outs and direct torque to the wheel with better traction. This engagement converts the differential to a biasing unit, resisting differentiation by developing a bias torque across the axle.

The CTD provides a limiting action for smooth torque delivery to the wheel with traction. It also dampens or cushions the impact created by on-and-off traction conditions, such as a spinning wheel grabbing on a firm surface. CTD axles can be used at a variety of vehicle speeds.

## Wheel Differential Lock

SINGLE AXLE RATINGS GAWR
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17,000 lbs. - 30,000 lbs.
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TANDEM AXLE RATINGS GAWR
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40,000 lbs. - 60,000 lbs.
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*Note: Permitted use if axle (including capacity ratings where stated) vary with application and service. Please refer to Spicer Drive Axle Application Approval Guidelines, Item AXAG0200, for detailed application information.*

The driver-controlled wheel differential lock is also activated by the flip of a switch so it's there when you need it, supplying maximum pulling power under slippery driving conditions that challenge your skill and may immobilize your vehicle.

The air-activated clutch positively locks the differential gearing in the drive axle. When this clutch is engaged, power flows to the tires without any differential action, giving each wheel all the torque the road conditions will permit.

The wheel differential lock is engaged by a cab-mounted valve, causing the clutch to move in or out of engagement. This motion also trips an electrical switch used to activate a light in the cab or sound an audio device, indicating that the wheel differential is engaged.

When the clutch is disengaged, the differential operates normally, dividing torque equally between the tires and compensating normally for cornering or tire size variations. Full differential-lock axles are designed for speeds not greater than 25 mph.

## Limited-Slip Automatic Differential

SINGLE AXLE RATINGS GAWR
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10,000 lbs. - 22,000 lbs.
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TANDEM AXLE RATINGS GAWR
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34,000 lbs.
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Fully automatic activation of a durable gear-type torque-sensitive differential for a variety of applications. Parallel axis planetary helical gears provides a quiet, automatic splitting of wheel torque.

These differentials perform like conventional (open) differentials under normal driving conditions until additional traction is needed.

When the vehicle experiences unequal side to side traction as encountered on wet, muddy, snowy or sand and gravel surfaces, the differential automatically provides a friction force that retards or prevents the wheel with less traction from spinning — effectively providing more torque to the wheel with better traction to keep you moving!

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