



Spicer® Drive Axles

Driver Instructions

AXDR0130
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Warnings & Cautions

Warnings

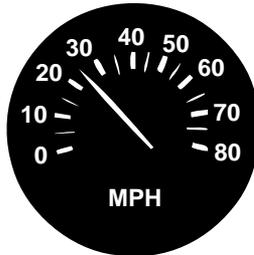
 WARNING

Do NOT use the wheel differential lock when traveling downhill.



 WARNING

Do NOT use the wheel differential lock at speeds over 25 MPH.



Warnings & Cautions

⚠ WARNING

When the wheel differential lock is engaged, be sure to allow for a larger turning radius and greater steering effort.



⚠ WARNING

Engage the wheel differential lock **ONLY** when the vehicle is stationary or moving without wheel differentiation (spinout).



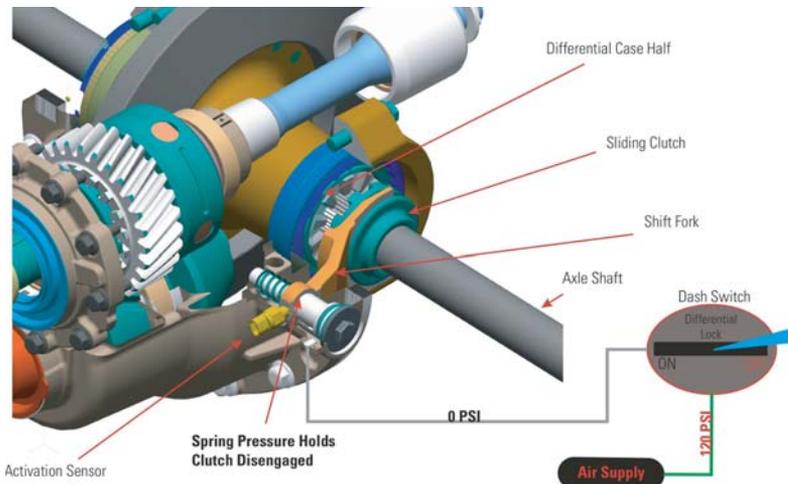
Overview

Operation Overview

Dana's wheel differential lock is driver-controlled and operated by the carrier mounted air-actuated shift unit. In operation, it positively locks the wheel differential to provide improved traction under adverse road conditions. The differential lock is controlled through an electric switch or air valve mounted in the cab. The locking mechanism is air operated to engage a mechanical clutch that locks the wheel differential. It is spring operated to disengage the lock and permit the wheel differential to operate normally.

Air pressure applied to the shift cylinder moves the piston, push rod, shift fork and sliding clutch engages the fixed clutch mounted or machined into the wheel differential case half. The sliding clutch is splined to the axle shaft. Engaging the two clutches locks the axle shaft to the differential case half, which, in turn locks the wheel differential.

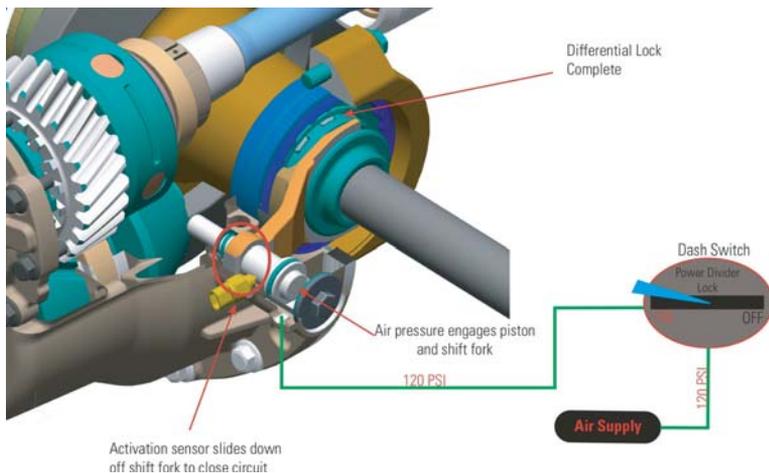
Disengaged Position



Note: Zero air pressure to shift system, the spring is keeping shift assembly in disengaged position. Sliding clutch is splined to the axle shaft.

Overview

Engaged Position



Note: Vehicle system air pressure is now applied to the shift system. Sliding clutch now connects the axle shaft to the differential case. Wheel differential can not rotate. Both wheels will turn at the same speed.

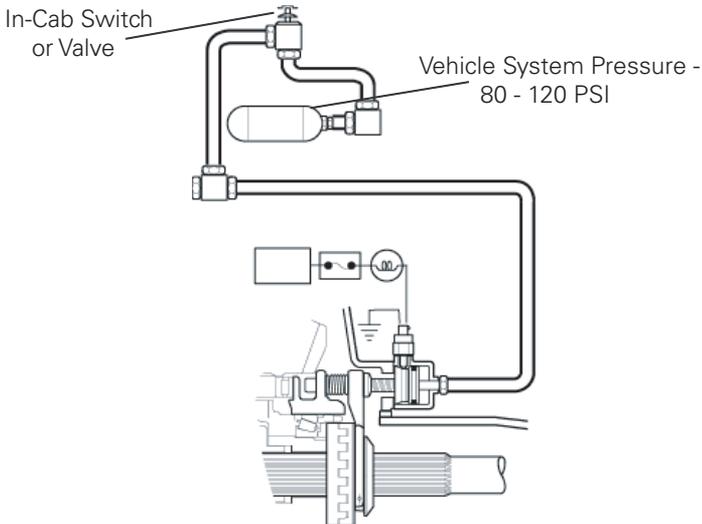
Control Systems for Wheel Differential Lock

Two systems may be used to control the wheel differential lock operation.

Direct Interlock System

The driver manually locks and unlocks the wheel differential using a cab-mounted control valve or switch. When the control switch is placed in the lock position, the air supply solenoid valve opens and air pressure activates the shift unit. When the control switch is placed in the unlock position, air pressure supply is shut off and air pressure is released from the shift unit.

Note: Vehicles with this system should not be operated with the wheel differential engaged above 25 MPH.



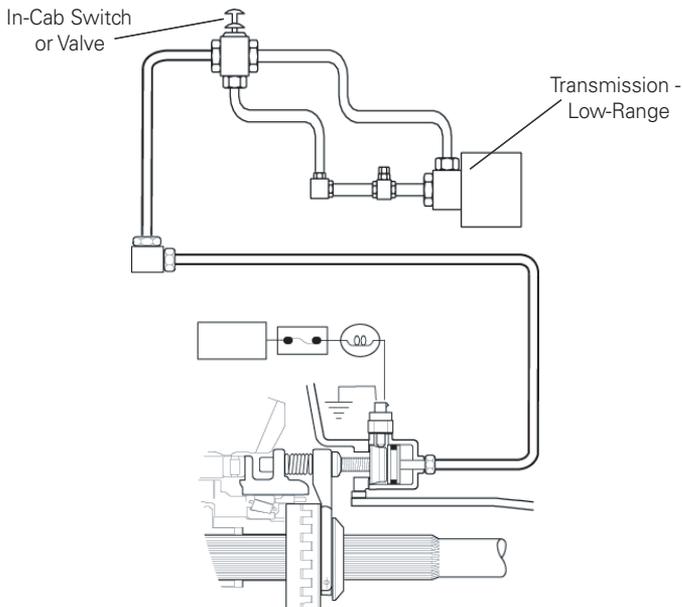
Overview

Transmission Low-Range Interlock System

The wheel differential is locked manually with the transmission in Low-Range. It is unlocked by the driver or unlocked when the transmission is shifted out of Low-Range. It is designed to ensure the differential lock is not left engaged at speeds above 25 mph.

When the driver places the cab mounted control valve in the lock position and with the assist pressure from the transmission control circuit, tank air pressure is supplied to the differential lock shift unit through the cab mounted control valve.

Note: If the transmission is shifted out of low range (with cab mounted control valve in the lock position), the air pressure to the differential shift units is shut off automatically. The transmission Low-Range valve closes, shutting off air assist supply to the cab mounted control valve which, in turn, releases the tank air pressure from the air shift unit. If the driver subsequently shifts back into Low-Range, the differential lock will not re-engage automatically.



Operating Instructions

Engage (Lock)

1. Flip the control valve lever to the " Lock" position, either while the vehicle is stationary, or while moving at steady speed under 25 MPH without the wheel differentiation (spinout).
2. Let up momentarily on the accelerator pedal to relieve torque on the gearing and fully engage the sliding clutch.
3. When the differential lock is engaged, the indicator light will be on, or an audible signal will sound.

Note: When the differential lock is engaged, the vehicle will under-steer, requiring a longer turning radius for a given turn.

Disengage (Unlock)

1. To disengage the wheel differential lock, flip the control lever to the "Unlock" position.
2. Let up on the accelerator pedal momentarily to relieve torque and allow the sliding clutch to disengage.
3. When the differential lock is disengaged, the indicator light and/or audible sign will go out.

Note: Occasionally the differential lock may not disengage immediately due to torque "wrap up," when this occurs, drive normally for a short distance with the control level still in the "Unlock" position until normal road forces release the torque wrap up condition.

Operation

Important To Remember

When engaged, the wheel differential lock will cause the vehicle to under-steer, meaning that the vehicle will not turn as quickly, and more steering effort will be required.

Do not use the wheel differential lock when traveling downhill. This will ensure maximum control of the vehicle.

Use the wheel differential lock only at speeds less than 25 MPH. At higher speeds the under-steer handling characteristics could be dangerous.

The differential lock should only be engaged when the vehicle is stationary (recommended), or moving less than 25 MPH without wheel differentiation (spinout). Engagement of the wheel differential lock while wheels are rotating at different speeds (differentiation) may cause shift fork scoring and bending, clutch teeth to fail and/or axle shaft shock failures.

This system should only be used when poor traction is encountered; it must be disengaged when traveling on solid road surfaces.

Operating the wheel differential lock in the engaged "lock" position of solid surfaces while turning corners (differentiating), may cause clutch jump out damaging shift system components.

The wheel differential lock may not disengage immediately due to torque "wrap up". This wrap up can occur when the system is disengaged while the vehicle is operating on surfaces such as sand, mud or even snow.

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