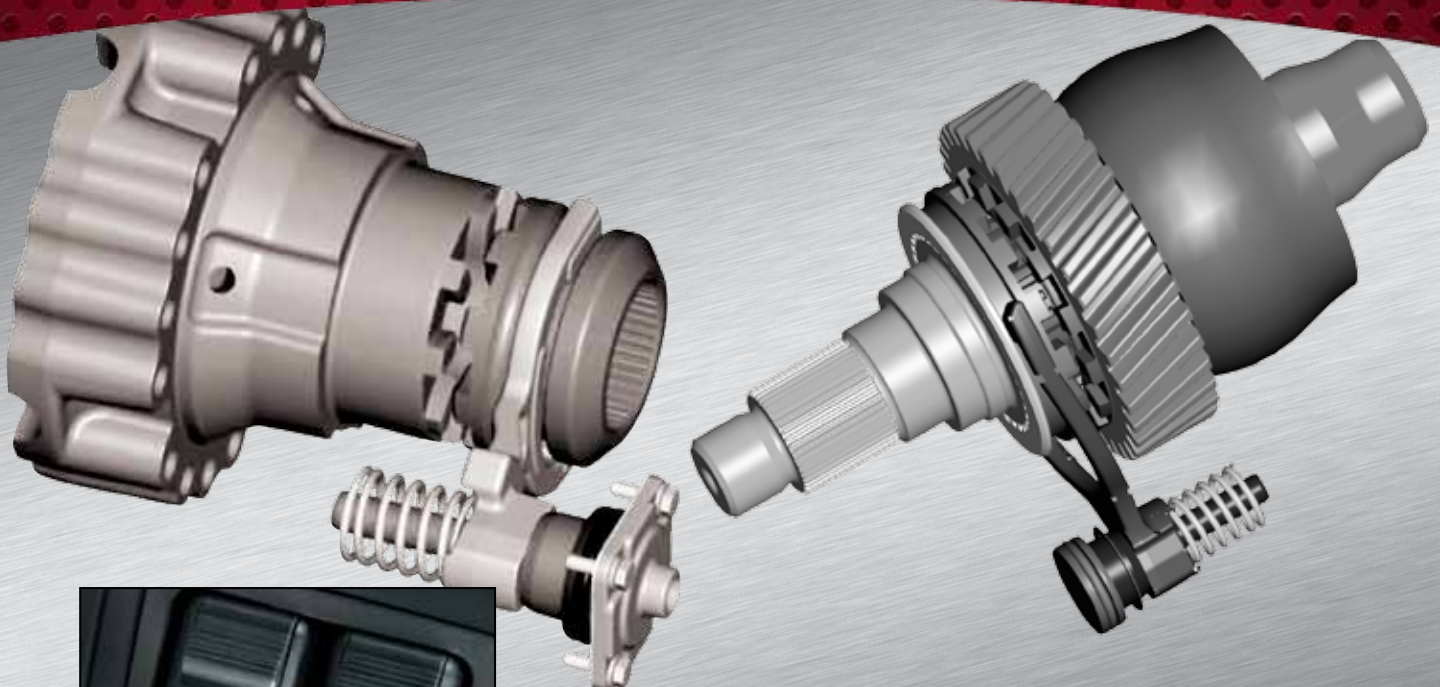




**MERITOR**<sup>®</sup>

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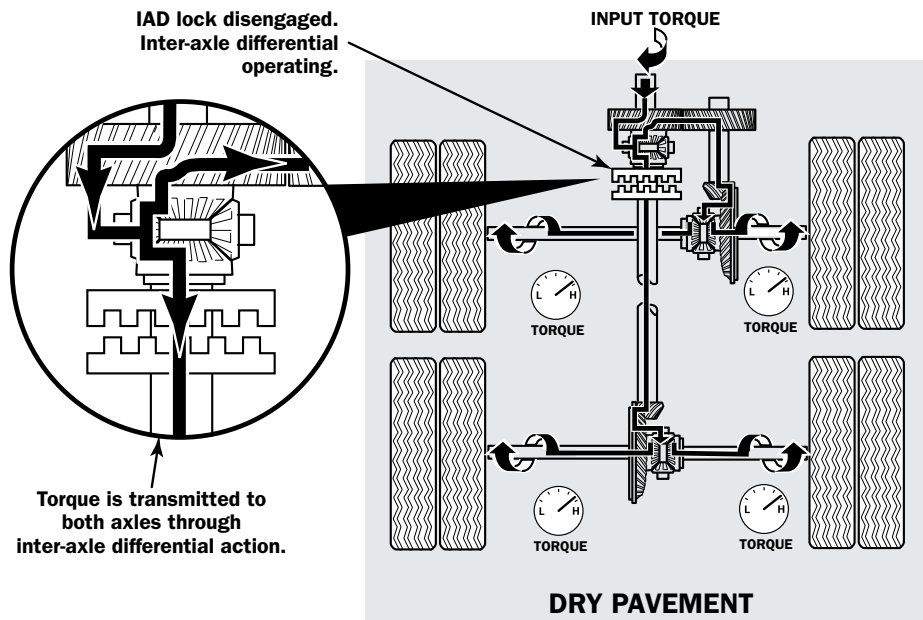
**DRIVER-CONTROLLED DIFFERENTIAL LOCK (DCDL)  
INTER-AXLE DIFFERENTIAL (IAD) LOCK**



# Inter-Axle Differential (IAD) Lock

## Torque Distribution with IAD Lock Disengaged (Inter-Axle Differential Is Unlocked)

All Wheel Ends On Dry Pavement



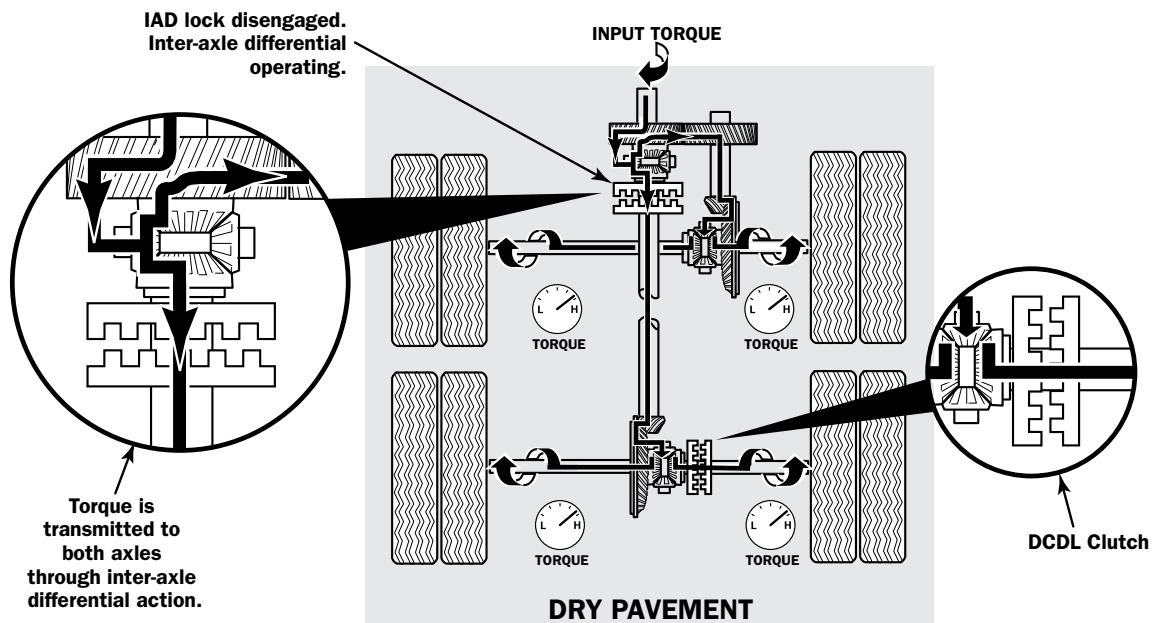
All wheels have equal traction.

# Driver-Controlled Differential Lock (DCDL)

## Torque Distribution with IAD Lock Disengaged (Inter-Axle Differential Is Unlocked)

DCDL Lock Disengaged (DCDL Is Unlocked)

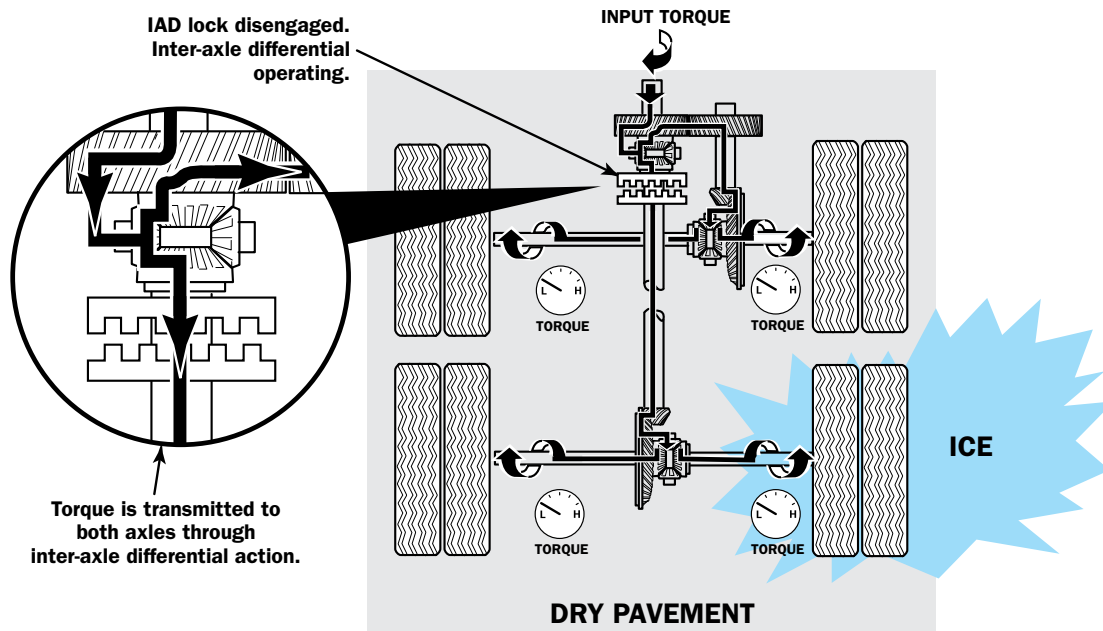
All Wheel Ends On Dry Pavement



All wheels have equal traction.

## Torque Distribution with IAD Lock Disengaged (Inter-Axle Differential Is Unlocked)

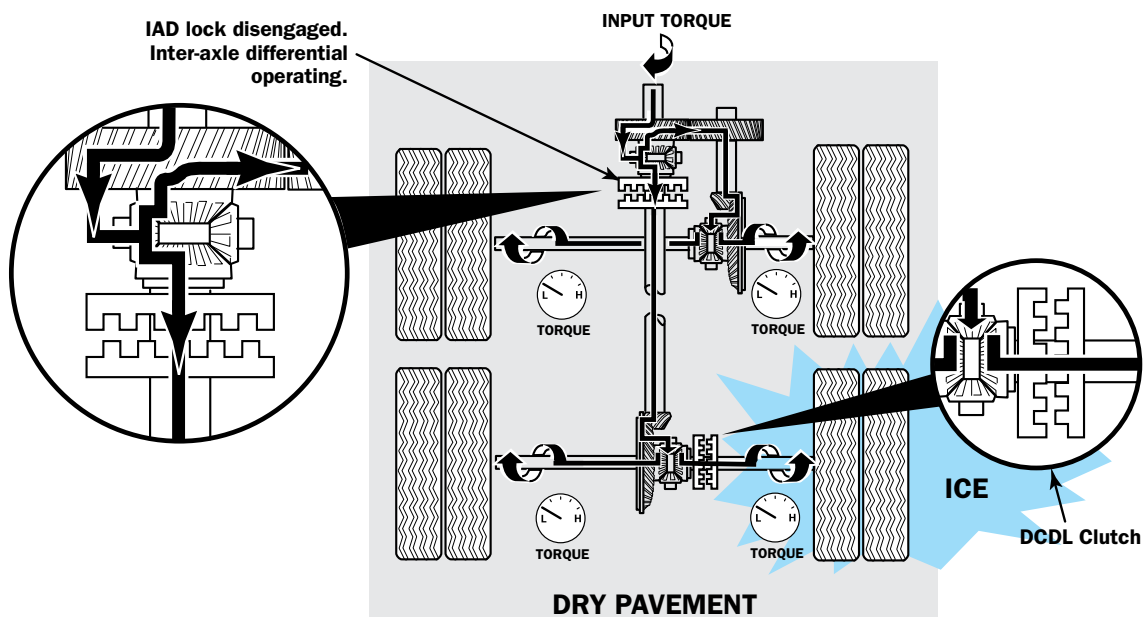
One Wheel End On Slippery Surface



Torque to all wheels is limited by the wheel on the slippery surface.

## Torque Distribution with IAD Lock Disengaged (Inter-Axle Differential Is Unlocked) DCDL Lock Disengaged (DCDL Is Unlocked)

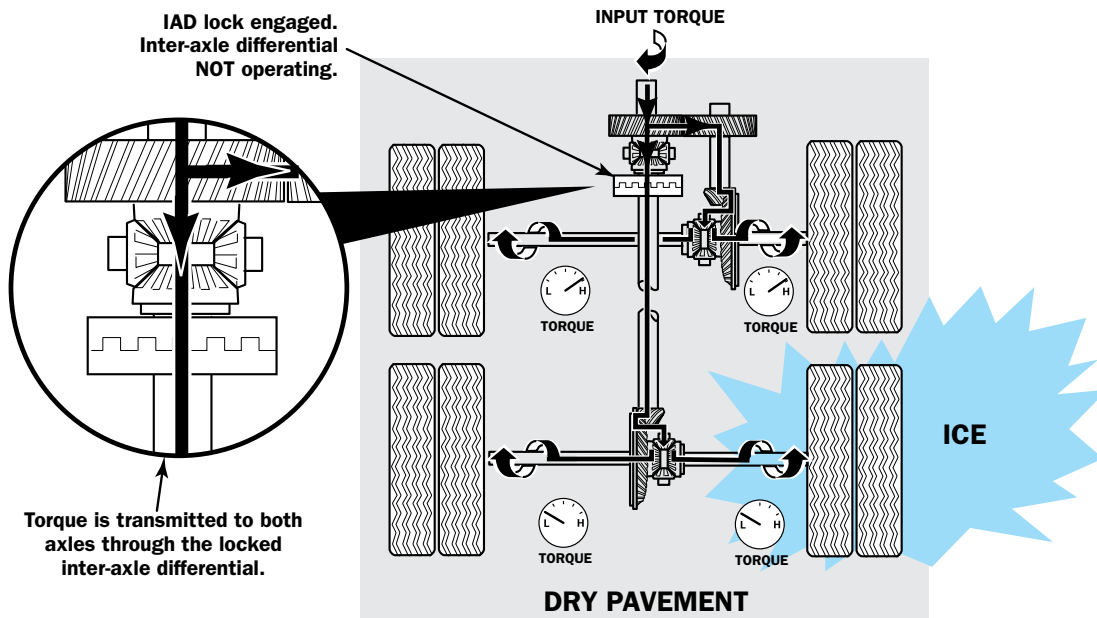
One Wheel End On Slippery Surface



Torque to all wheels is limited by the wheel on the slippery surface.

## Torque Distribution with IAD Lock Engaged (Inter-Axle Differential Is Locked)

### One Wheel End On Slippery Pavement

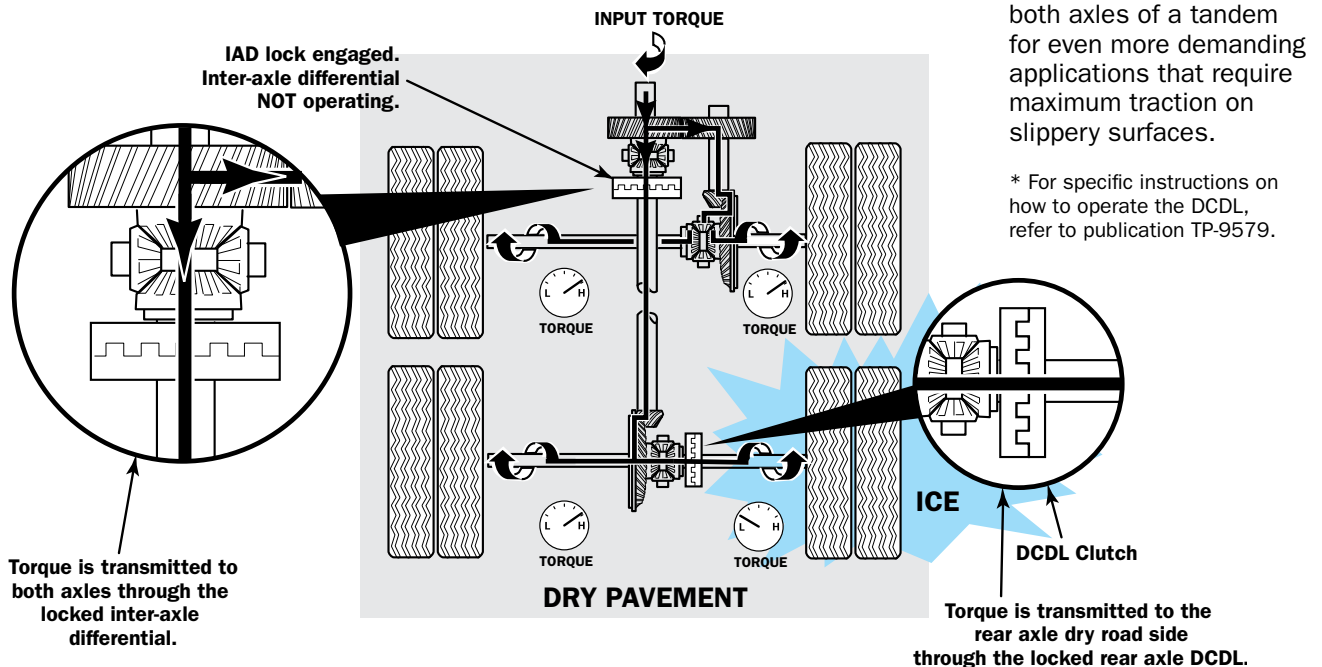


**Forward axle can develop high torque due to dry pavement.  
Rear axle torque limited by wheel on slippery surface.**

## Torque Distribution with IAD Lock Engaged (Inter-Axle Differential Is Locked)

### DCDL Lock Engaged (DCDL Is Locked)

#### One Wheel End On Slippery Surface



**Forward axle can develop high torque due to dry pavement.  
Rear axle can develop high torque on dry road side.**



# DRIVER-CONTROLLED DIFFERENTIAL LOCK (DCDL) INTER-AXLE DIFFERENTIAL (IAD) LOCK

## Wheel Differential Function

- Allows both wheel ends of an axle to receive equal torque from the driveline by "splitting" the torque between the two wheel ends
- Compensates for:
  - Speed difference between wheel ends that occurs when the vehicle is turning and the outside wheel rotates faster than the inside wheel
  - Tire mismatch
  - Uneven road conditions

## Inter-Axle Differential Function

An inter-axle differential (IAD) works in a similar manner to the main differential except it splits the torque equally between the two axles of a tandem, rather than the two wheel ends of an axle.

- Allows for speed differences between the two axles of the tandem

## Axle Configuration Availability

DCDL	IAD Lock
<ul style="list-style-type: none"><li>○ Front drive steer axle</li><li>○ Single reduction rear axles</li><li>○ Forward rear axle of a tandem</li><li>○ Rear rear axle of a tandem</li><li>○ Both axles of a tandem</li></ul>	<ul style="list-style-type: none"><li>○ Standard on all Meritor® tandem drive axles</li><li>○ Compatible with the DCDL:<ul style="list-style-type: none"><li>– Forward rear axle of the tandem</li><li>– Rear rear axle of the tandem</li><li>– Both axles of the tandem</li></ul></li></ul>

## DCDL Features & Benefits:

- When used properly, the DCDL protects the wheel differential components by preventing spinout damage
- The DCDL has fewer parts compared to other traction devices providing; improved serviceability, less maintenance, lower cost, and high reliability
- The DCDL does not require special lubricants or additives like some clutch pack traction devices
- The DCDL does not generate wear particles like some clutch pack and mechanical torque biasing devices
- The DCDL is driver controlled and used only when unfavorable traction conditions are encountered
- The DCDL locks the wheel differential directing all available torque to the wheel ends
- The DCDL, when unlocked, does not generate fuel consuming friction like clutch pack or mechanical torque biasing devices
- When the DCDL is not in use the differential functions smoothly, no stick, slip behavior or unwanted NVH like some clutch pack and mechanical torque biasing devices

## IAD Lock Features & Benefits:

- When used properly, the IAD Lock protects the power divider components by preventing spinout damage
- The IAD Lock can be used at all speeds and for longer periods depending on weather conditions, such as rain or snow
- The IAD Lock does not require special lubricants or additives and does not generate wear particles like some mechanical torque biasing interaxle differential devices
- The IAD Lock is driver controlled and used only when unfavorable traction conditions are encountered
- The IAD Lock when engaged locks the inter-axle differential directing all available torque to both axles
- The IAD Lock, when disengaged, does not generate fuel consuming friction like other mechanical torque biasing inter-axle differential devices

## DCDL/IAD Lock Comparison:

The IAD Lock is a standard feature of the forward axle of Meritor tandems and is differentiated from the DCDL operation by the following:

DCDL	IAD Lock
Provides maximum traction potential to each wheel end of an axle	Provides maximum traction potential to both the forward and rear drive axles of a tandem
To be applied for very short periods of time and at very low speeds due to the possible effects on handling characteristics of the vehicle with the lock engaged	May be applied at speed (assuming both axles are rolling and that spinout has not started to occur) and/or remain engaged for long periods of time depending on weather conditions such as snow, sleet or rain
Manually turned on and off by a switch, but also set up to automatically shut off, in most instances, when a predetermined vehicle speed is obtained	Manually turned on and off by a switch in the cab

## Why Use DCDL in Addition to IAD Lock?

The DCDL works along with the IAD Lock to provide maximum possible traction when the vehicle requires it. The IAD Lock ensures there is maximum traction potential for both the forward and rear drive axles of the tandem. Locking the main differentials on each axle ensures maximum traction at each wheel end of each side.

The DCDL has an advantage over some automatic traction devices because it allows the driver to select optimum traction only when needed while providing normal differential action for favorable traction conditions. Some automatic traction enhancement devices only provide traction to the inside wheel of an axle during a turn or provide limited torque bias to the wheel end with traction.

For more information, call the OnTrac Customer Service Center at 866-OnTrac1 (866-668-7221) or visit [arvinmeritor.com](http://arvinmeritor.com).



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