

## Notable Tractor Changes

- Power Plant**  
The 2018 Kenworth road tractors are outfitted with the PACCAR MX13 engine. The engine is rated at 455 hp, 1,650 ft. lb. of torque.
- Seat**  
The new road tractors are outfitted with the Kenworth Premium seat, featuring automatic ride height suspension.
- Tandem Axle**  
The Kenworth tractors will all be tandem drive axle featuring Meritor tandem axles.
- Transmission**  
This year, we will be using a new Paccar / Eaton 12 speed AMT transmission.
- Sliding 5th Wheel**  
To accommodate being able to pull both 28' pups and longer van trailers, these tractors will be outfitted with a 24", air operated 5th wheel slide.

## 2018 Road Tractor Changes

The purpose of this document is to provide information regarding changes in equipment specifications or components on new equipment purchases and provide operators with information regarding features and proper use of these components.

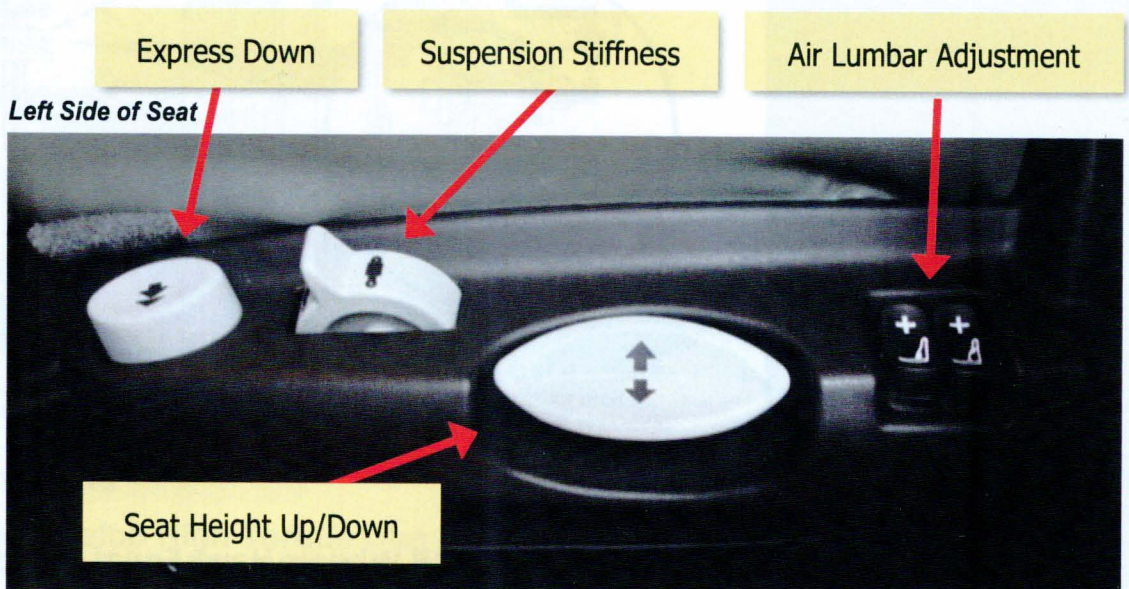
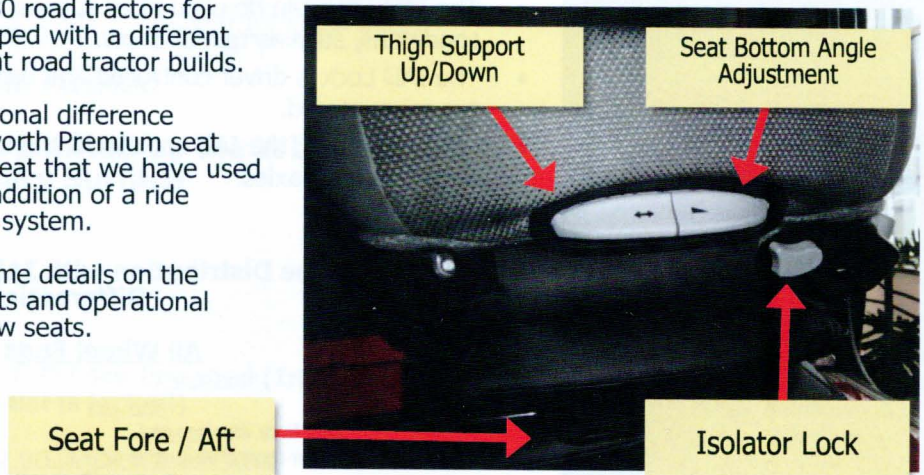
### Seat

The Kenworth T680 road tractors for 2018 will be equipped with a different seat than on recent road tractor builds.

The primary functional difference between the Kenworth Premium seat and our National seat that we have used in the past is the addition of a ride height suspension system.

Below provides some details on the various components and operational controls on the new seats.

#### Front of Seat



## PACCAR MX13

The PACCAR MX family of engines provides a blend of the latest technological advancements and proven and trusted technology and engineering.

### Strong, Lightweight Materials

The block and cylinder head on the MX engines are constructed using Compacted Graphite Iron, or CGI. CGI is 75% stronger than gray cast iron, meaning that wall thickness of castings can be reduced without compromising strength, optimizing stiffness of the block and head.

### Encapsulated Wiring Harness

The main engine wiring harness is molded in durable, formed material with sealed connectors to virtually eliminate chafing and electrical shorts and reduce stress on connectors.

### High Pressure Common Rail Fuel System

The MX engines utilize a proven high pressure common rail fuel system that utilizes sophisticated controls to regulate the fuel in a central manifold, only compressing the amount of fuel needed. The result is finer fuel atomization, optimizing combustion and improving fuel economy and emission levels.



## Paccar Automated Transmission

Transmission Provides Improved Operation and Efficiency



Turn engine brake on and select level (Min to Max) by moving stalk Up/Down



Select Drive mode by twisting gear selector



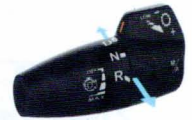
Push button on end of stalk to cycle manual mode

The transmission in the T680 tractors is a 12 speed, pneumatically shifted automated gearbox.

Through a single control stalk, you can:

- Turn the engine brake On/Off
- Adjust level of engine brake
- Select drive mode (D-N-R)
- Enable manual mode
- Manually shift (when allowed)

The manual mode can be activated and manual shifts made (when engine and ambient conditions allow) through 6th gear.



Up/Down shifts by pulling / pushing stalk towards steering wheel



Driver Performance Center shows shift mode, gear, and engine brake mode and level (Off, Low, Medium, High)



## Sliding Fifth Wheel

Sliding Wheel Provides Equipment Flexibility While Utilizing Tandem Trucks

The 2018 Kenworth tractors are equipped with a 24" fifth wheel slide.

It is very important to understand the two settings needed to employ to properly hook to the different types of trailers.

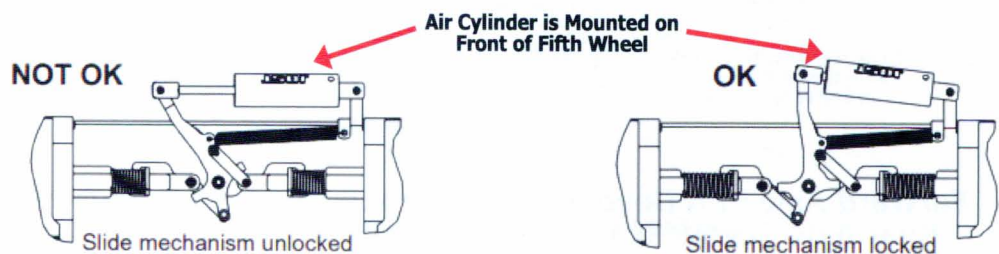
- When hooking to a 28' pup, the fifth wheel must be slid completely to the rearmost position.
- When hooking to a van trailer with shallower king pin setting and greater distance to the landing gears, the fifth wheel should be slid to the completely forward position.
- It is important, when unhooking from a trailer with the fifth wheel in the forward position, to move the fifth wheel to the rearmost position to ensure any trailer can be hooked.



Fifth Wheel Slide Switch (red switch)



Never operate the truck with the switch in the UNLOCK position. Always inspect the fifth wheel after you lock the switch to be sure the fifth wheel lock is engaged.



## Fusion Accident Mitigation

The Kenworth road tractors are equipped with Fusion accident mitigation system, similar to the system found on our 17 series Mack road tractors.

The Fusion system uses information from both the radar and the camera together to identify potentially threatening stationary and moving objects. When these complimentary technologies agree on target identification, false alerts can be significantly minimized.

The radar locates objects—moving and stationary—within its detection range, which is about 22 degrees wide and 500 feet long.

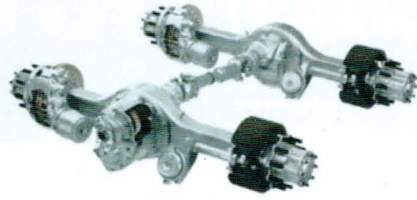
The radar is particularly good at detecting the distance, speed, and angle of objects even through difficult-to-see conditions like snow, rain, fog, or smoke. But it generally has more difficulty determining the exact size, lane position, and type of objects it's tracking.

That is where the camera can help. It's viewing angle is wider than the radar (about 42 degrees to better detect cut-ins). It detects objects visually much like a driver's eyes and is highly effective at determining the size, lane position, and critical characteristics of an object—which is why the camera is a very good complement to the radar.

As with all accident avoidance systems on our trucks, these systems are built on a foundation of the anti-lock brake system and electronic stability program.

When automatic braking is required, just as when driver-induced emergency braking is induced, these systems work as one to ensure that whatever level of braking is required can be performed safely.

**Bendix**



## Tandem Drive Axles

Tandems Allow for Greater Drive Axle Payload, But Do Require Basic Understanding of Operation for Best Performance and Reliability.

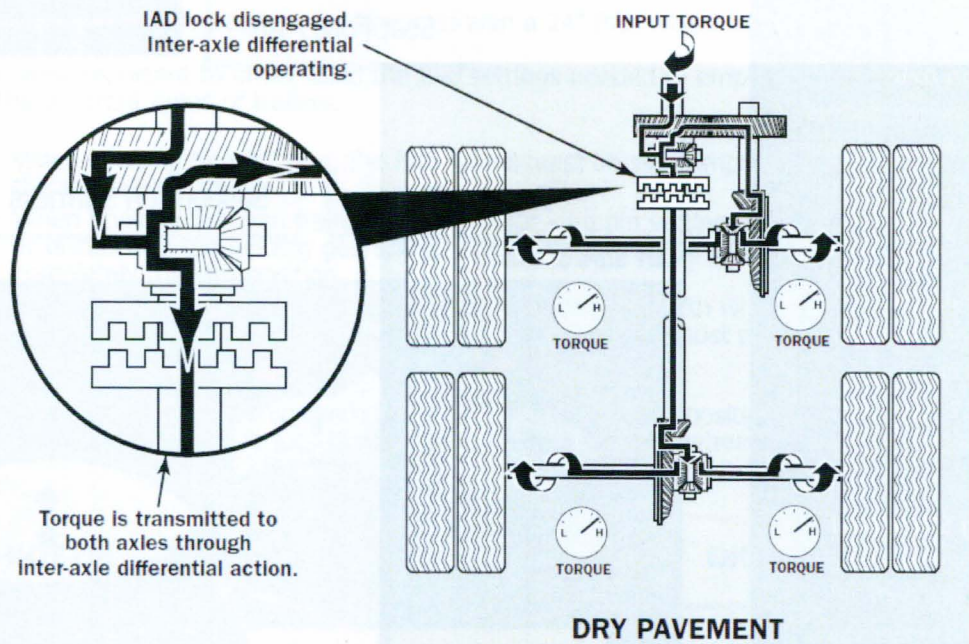
### Basic Tandem Operation

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

- 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 is driver controlled and used only when unfavorable traction conditions are encountered.
- When engaged, the IAD Lock locks the inter-axle differential directing all available torque to both axles.

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

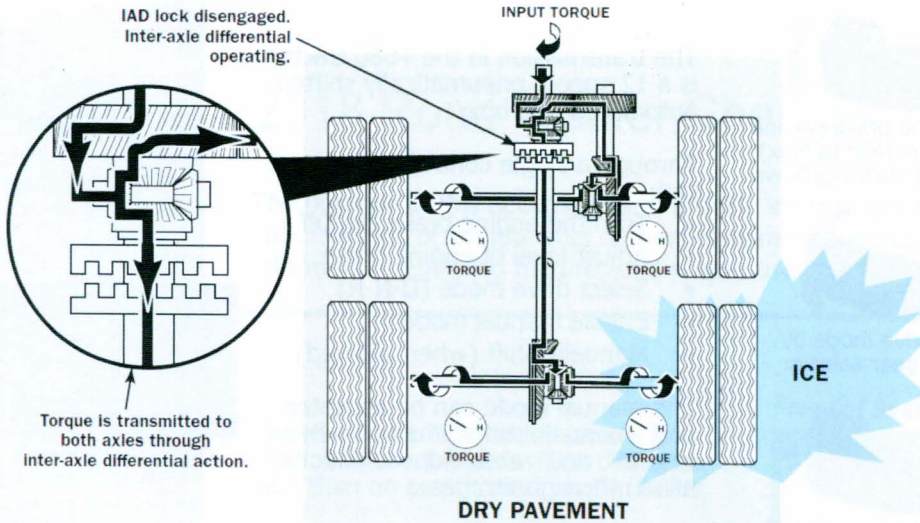
#### All Wheel Ends on Dry Pavement



#### All Wheels Have Equal Traction

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

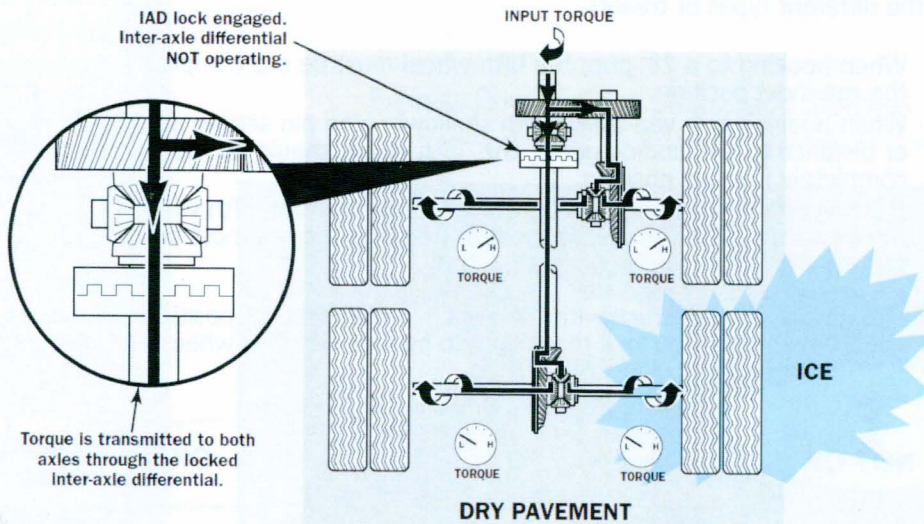
### One Wheel End on Slippery Surface



## Torque to All Wheels is Limited by the Wheel on the Slippery Surface

## Torque Distribution with IAD Lock Engaged (Inter-Axle Differential is locked)

### One Wheel End on Slippery Surface



**Forward Axle Can Develop High Torque Due to Dry Pavement. Rear Axle Torque is Limited by Wheel on Slippery Surface.**

## Diff Lock or Power Divider?

What's the difference between a differential lock and a power divider in a tandem axle?

The basic answer is that a differential lock locks both wheel ends on the same axle whereas a power divider locks the front axle to the rear axle. A power divider is also referred to as a Inter-Axle Differential. Our Kenworth tandem axle road tractors are equipped with a power divider, or Inter-Axle Differential (IAD).

Trucks with differential locks can actually have two diff lock switches, one for each drive axle.

## When Should I Use the IAD?

A big difference between an IAD and a differential lock is that an IAD can be used at any speed as needed for slippery road conditions.

Differential locks must only be used at very slow speeds as they remove axle differential function and can greatly adversely impact steering.

A couple of very important reminders using the IAD installed on our Kenworth tandem axles:

- **NEVER** engage the IAD switch (lock) when the wheels are already spinning.
- Only use the IAD when needed. Locking the IAD impacts both power and fuel economy and increases wear on driveline components.

For smoothest operation of IAD and to ensure maximum life out of driveline components, engage the IAD at a steady speed (again, ensuring no wheel spin). Slightly lifting off of the accelerator will provide a smooth sure engagement of the lock.



Inter-Axle Differential Switch