

SPEC'ING THE RIGHT FIFTH WHEEL



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HERE IS HOW
TO GET STARTED:

1. Vehicle Properties
2. Vehicle Capacity
3. Top Plates
4. Option Selections
5. Mounting System
6. Height Selection
7. Cost Considerations
8. Spec'ing Tips

You might not think that having a multitude of choices could simplify a decision, but experience shows that, when spec'ing a heavy vehicle, more choices can simplify the process.

Proper selection of fifth wheels falls under that category:

the more choices you have, the easier it is to pinpoint the right specifications.



1

VEHICLE PROPERTIES

FIRST, CONSIDER THE TYPE(S) OF VEHICLES AND TRAILERS IN YOUR FLEET OPERATION.

A single trailer setup and a B-train setup will have vastly different functions and demands to take into account. Same with a rear-tilt vs. a side-tilt dump trailer, a tanker vs. a dry van, or a long-haul tractor-trailer vs a yard spotter. Different loads and forces are at play in every distinct application. Your unique combination of vehicle and load will play a big role in determining whether you can specify a basic, universal fifth wheel or a more specialized model.

SINGLE TRAILER SETUP VS B-TRAIN SETUP

REAR-TILT VS SIDE-TILT DUMP TRAILERS

TANKER VS. A DRY VAN

LONG-HAUL TRACTOR-TRAILER VS A YARD SPOTTER



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VEHICLE CAPACITY

NEXT, CONSIDER CAPACITY.

Although there can be some overlap, most all tractor-trailer combinations can be classified as one of three types:

- **Standard Duty** (100% on-road; <95,000 GCW)
- **Moderate Duty** (<10% off-road; <115,000 GCW)
- **Severe Duty** (>10% off-road; >115,000 GCW)

Because each classification calls for unique capabilities in a fifth wheel, the following factors must be considered:

- **In what type of operation will the tractor be involved?**
- **Will that operation vary from time to time or over the life of the tractor?**
- **What will be the maximum towed vehicle weight (TTW)?**
- **What will be the maximum drawbar load – the highest safe horizontal pulling force?**
- **What will be the maximum vertical load to be carried – the highest safe down force on a coupling device?**

Once those questions are answered – and there may be more than one answer to any of them, depending on the complexity of your operation – you can select the most appropriate fifth wheel capacity for your units.

There is one common factor that is of the utmost importance: no matter the vehicle size or application, **it always pays to spec a fifth wheel for a somewhat higher capacity than you need.** The extra margin can avoid safety issues and maintenance headaches down the road, and ultimately lead to lower cost of operation.



STANDARD DUTY



MODERATE DUTY



SEVERE DUTY



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TOP PLATE SELECTION

THE TOP PLATE IS NOT JUST THE PLATFORM ON WHICH THE TRAILER RESTS:

it encompasses a variety of components that work together to secure the trailer to its tow vehicle. A variety of available options can add to the efficiency and durability of the top plate, but they can add weight and cost.

When you consider that the weight difference between a lightweight top plate and a heavy-duty unit can be over 300 pounds, **it's clear that weight is one of the top factors in selecting the right unit and the right options.** The lighter demands of a standard-duty application may make it possible to select a lightweight top plate, while a severe-duty application will likely demand a heavier and more durable heavy-duty top plate. It's not a stand-alone consideration because cost, fuel-economy, and payload issues must be taken into consideration.

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OPTIONS SELECTION

WHILE THERE IS SOME OVERLAP, FIFTH WHEEL OPTIONS GENERALLY FALL INTO FOUR MAIN CATEGORIES:

EFFICIENCY

SAFETY

COST

APPLICATION SUITABILITY



The top plate encompasses a variety of components that work together to secure the trailer to its tow vehicle.



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OPTIONS SELECTION

EFFICIENCY – A manual left-hand release is standard on all fifth wheel models, but in some applications, **operations can be made faster and more convenient if you equip a fifth wheel with an in-cab release system.**

SAFETY – The appeal of an in-cab release system is increased by its **obvious safety benefits**; drivers experience less hand strain and fatigue, and the potential for injury is reduced.

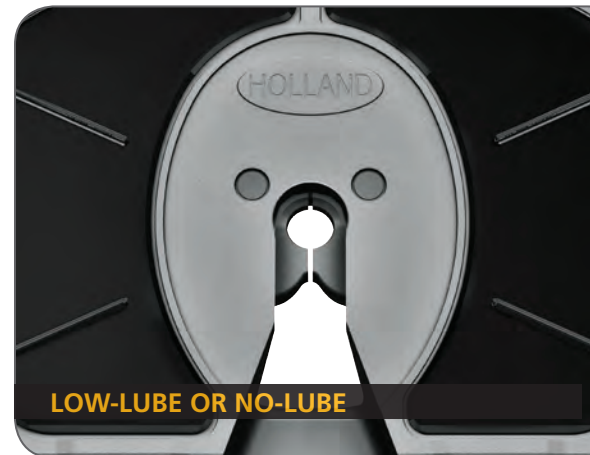
COST – Fifth wheel options can reduce costs in several ways:

- **A weight-saving aluminum top plate can reduce operational costs by increasing payload and fuel economy.**
- **A security-enhancing secondary lock can be an invaluable loss-prevention accessory.**
- **A low-lube or no-lube top plate can be the ultimate cost-saving option, as it can reduce maintenance costs and maintenance-related downtime.**

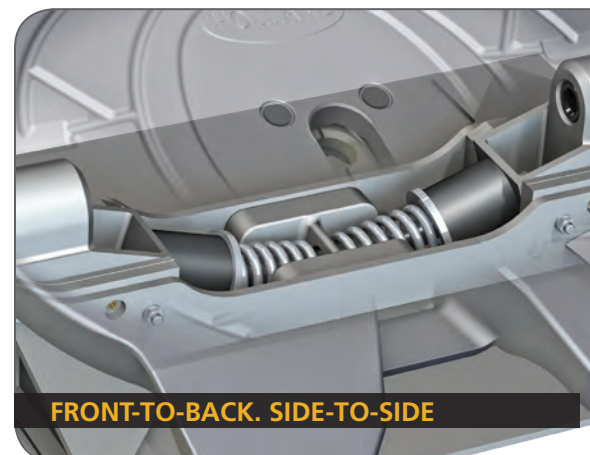
APPLICATION SUITABILITY – Because no road surface or work area is perfect, options to enhance the flexibility of the mount and top plate can increase the life and productivity of your vehicles and trailers. While many road-going fleets can operate efficiently with standard or no-tilt fifth wheels, tractor-trailers that regularly operate in rough or uneven terrain may benefit from the flexibility of a fifth wheel that can oscillate both front-to-back and side-to-side. These optional configurations can take the bite out of uneven and treacherous road surfaces, relieving stress on vital truck and trailer components while **providing an extra safety margin by enhancing the stability of the load.**



IN-CAB RELEASE SYSTEM



LOW-LUBE OR NO-LUBE



FRONT-TO-BACK. SIDE-TO-SIDE



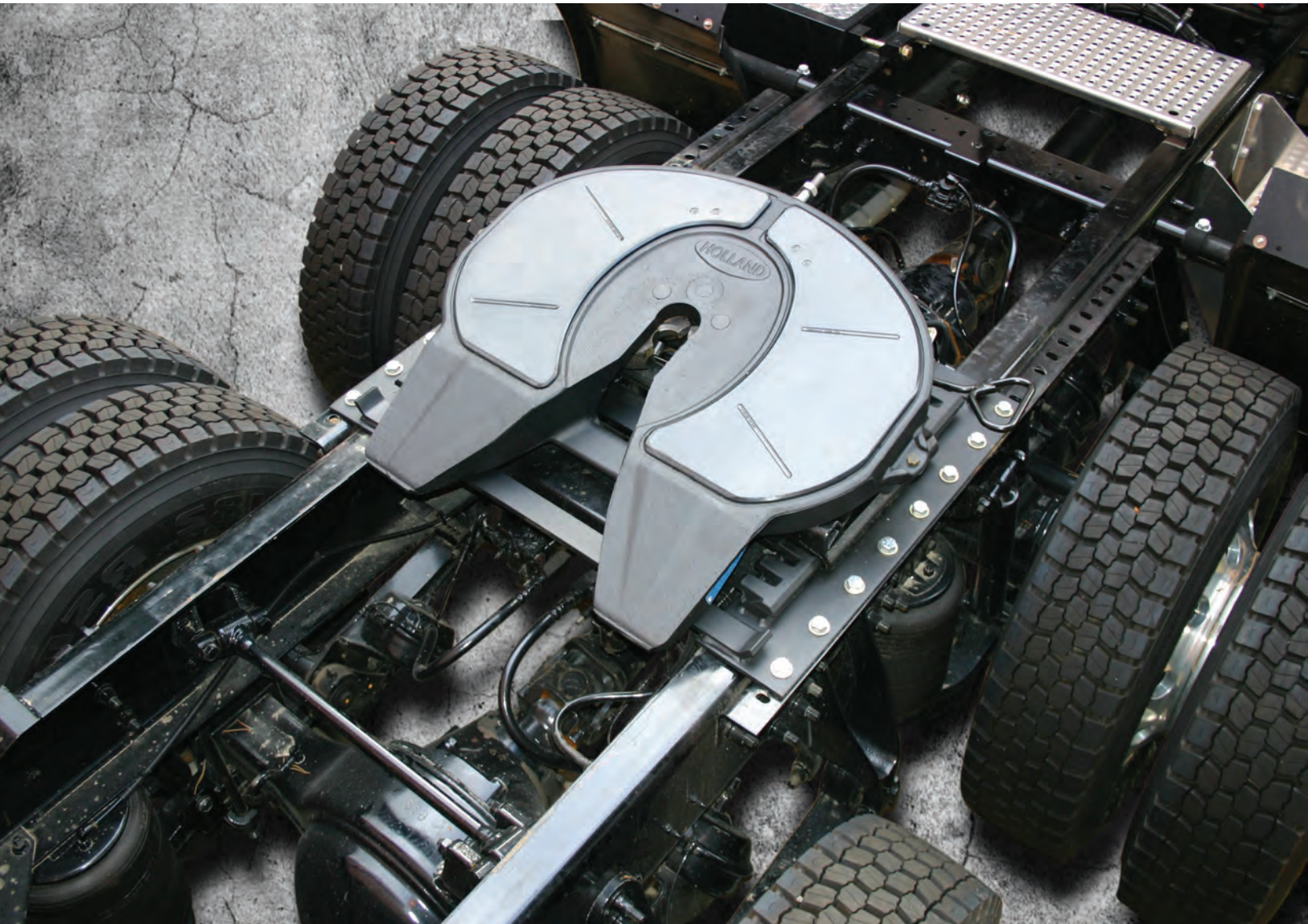
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MOUNTING SYSTEM SELECTION

A FIFTH WHEEL IS ONLY AS GOOD AS ITS MOUNTING SYSTEM.

As simple as it can appear to bolt a mounting assembly onto the frame of a truck, that assembly is crucial to the stability and longevity of the entire system. Mounting systems come in two varieties.



A fifth wheel is only as good as its mounting system.



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MOUNTING SYSTEM SELECTION

STATIONARY

This system cannot be adjusted front-to-back once mounted on the tractor frame. Although mounting methods differ, stationary systems offer across-the-board benefits in standardization, ease of operation, and low weight. They are well suited to applications in which axle loading, kingpin setting, and vehicle combination length all remain constant throughout the fleet. Standard stationary frame-mount configurations are:

- **Angle-on-frame bracket mount combining lower cost/less torsional rigidity.**
- **Foot mount - combining higher cost/higher torsional rigidity.**
- **Outboard angle integrated plate mount - combining universal-hole pattern for medium torsional rigidity, and bolt-on mounting.**

SLIDING

This system allows for adjustments to the distance between the fifth wheel and the back of the cab, for fleets that run a variety of trailers and a variety of loads. A sliding mount can easily accommodate changes in axle loading, kingpin setting and vehicle combination length, creating maximum versatility and productivity.

From there, the advantages grow:

- A sliding mount allows flexibility in

transferring weight between tractor axles, and accommodates trailers with different kingpin settings. By allowing the gap between cab fairings and trailer to be minimized, a sliding mount can have a positive effect on fuel economy.

- It also can improve maneuverability in tight locations and increase ride comfort, by allowing the fifth wheel to be moved closer to the centerline of the bogie or rear axle. Conversely, a sliding mount moved to its rearmost position can accommodate trailers with short landing gear clearance. As an extra added bonus, a sliding mount enhances a tractor's resale value.
- Selecting the correct travel length of a sliding mount will maximize these benefits. Short travel that won't allow the fifth wheel to be situated above the lead axle will rob you of efficiency, while excessive travel can lead to an overloaded lead axle, impact between tractor and trailer while cornering, and the addition of excess weight and cost.

Depending on the suspension and tractor frame, a sliding mount can be attached two different ways:

- **Over-the-frame inboard angle mount**
- **Outboard angle mount (bolt-on)**



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Trailer Height + Tractor Frame Height - 13'6" = Max Fifth Wheel Height.

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HEIGHT SELECTION

A FINAL CONSIDERATION.

Whether you select a stationary or sliding mount, you must take into consideration the height of the fifth wheel unit. The top plate of the fifth wheel, when horizontal and matched to the trailer upper coupler (bolster plate), must be low enough that the total height of the tractor-trailer does not exceed 13' 6", but high enough that articulation between tractor and trailer is not compromised or hampered.

To determine the maximum allowable fifth wheel height, simply subtract the trailer height and tractor frame height from the maximum height of 13' 6". The remainder will give you the precise range for the allowable height of your fifth wheel. It is advisable to go with the maximum height allowable, as the lower the height of the fifth wheel, the less articulation available between tractor and trailer, especially in off-road operation. Tire clearance must be accounted for as well, especially in situations where spring deflection under fully-loaded axles can temporarily lower the tractor's ride height. A miscalculation here could lead to costly damage to the fifth wheel, the tractor frame, tires and wheels, or the trailer.

For maximum efficiency and productivity, it's advisable to develop a standard fleet specification for fifth wheel height. When every tractor in the fleet has the same mounted fifth wheel height – height from the ground to the top of the fifth wheel – **there should be no need to adjust a trailer's landing gear before coupling.**



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COST CONSIDERATIONS

WHICH COST IS MORE IMPORTANT TO YOUR FLEET:

Acquisition cost? Total cost of ownership (TCO)? Resale value? Chances are, you assign a unique weight to each of these cost considerations, and consider them all when making a spec'ing decision. Here again, having a host of options and selections can make a purchasing decision easier. A wide variety of fifth wheel options can make it easier to balance the acquisition cost against the total cost of ownership, which **includes warranty coverage, maintenance costs, wear life, and availability of parts and service, wheels, or the trailer.**

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SPEC'ING TIPS

✓ Extreme Demands ✓ Fuel Economy ✓ Load Capacity ✓ Heavy-Duty
 ✓ On-Highway ✓ Rough Terrain ✓ Side-Dump ✓ Frame End-Dump?

1. The extreme demands of off-highway applications call for high-capacity fifth wheel.
2. A lightweight aluminum top plate is a good option for an on-highway application where fuel economy and load capacity are top considerations.
3. A heavy-duty on-highway fleet is a good candidate for a low-lube top plate, while a no-lube option is ideally-suited to a standard-duty on-highway application; both options can reduce maintenance costs and downtime.
4. A no-tilt mount is ideal for side-dump and frameless end-dump applications; a locking bar can be removed to allow articulation as the situation warrants.
5. A fully-oscillating fifth wheel provides the best performance on tractor-trailers that operate in applications such as mining or logging, where rough and uneven terrain is common (the center of gravity of loaded trailer must be below fifth wheel bearing surface).
 - a. Fleets hauling tank, dry bulk, B-train, and other rigid trailers can opt for a HOLLAND Kompensator® fifth wheel, which is designed to provide full oscillation while minimizing torque between tractor and trailer (the center of gravity of loaded trailer can be up to 44" above fifth wheel bearing surface).



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