

2025 Liquid Bulk Symposium

Chassis Collaboration: Aligning Industry Standards with DOT Guidelines

LIQUID BULK SYMPOSIUM 2025

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Panel Participants



Jeff Durham, President, Isochem Logistics

Julie Gautreau, Permits Manager, Louisiana DOTD

David Hurstell, COO, Transportation Compliance Services

What is a chassis?

- At its core, a chassis is a wheeled frame used to transport shipping containers and tank containers for the intermodal industry. While it may seem like a simple piece of equipment, the chassis plays a pivotal role in enabling the seamless movement of containers across rail, road, and port infrastructure. It serves as the backbone that holds the intermodal drayage process together, ensuring that containers and cargo can move efficiently to their final destinations.



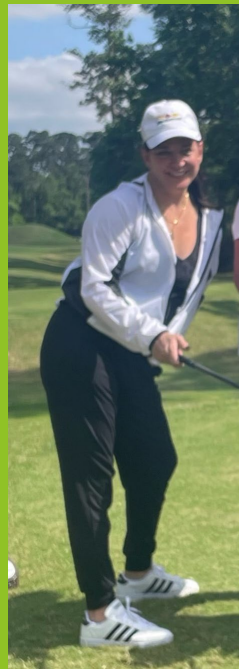
Do we underrate chassis? We rarely talk about them...

- ▶ Without chassis, the movement of goods from ship to rail or truck—and eventually to the consignee—would literally grind to a halt on the ground. Despite their critical role, chassis are often misunderstood or taken for granted by those not directly involved in intermodal operations.



Things that are
also under
underrated....

- Brenda
Gonzalez's
golf game.



Things that are also
under underrated....

- ▶ Queen's 1985 Live Aid performance of "Radio Gaga"



Things that are also
under underrated....

- ▶ Cracker Barrel
Hashbrown Casserole



OLD COUNTRY STORE

Things that are also under underrated....



- Movie “Heat” from 1995 starring Robert DeNiro and Al Pacino

Things that are also
under underrated....

- Getting from West Baton Rouge to East Baton Rouge on I-10 with no traffic



Tank Container Chassis

- Tank container chassis were specifically designed with a drop frame design to haul tank containers containing both hazardous and non-hazardous bulk liquids. This drop frame design lowers the center of gravity of the loaded tank container, improving stability and handling.
- Due to their shifting contents, tanks are at greater risk for roll overs hence the drop frame design. In addition, the longer length of the tank chassis allows for it to legally scale most loaded tanks without violating axle limits.





Tank Container Chassis

- Like a standard container chassis, the tank container chassis has bolsters and twist locks to provide a secure mounting mechanism. Thus, not only can tank chassis be used to transport tanks, but also 20 ft. containers, especially well suited for those hauling flexi-bags or flexitanks.
- Tank chassis design has evolved in numerous ways as stronger, yet lighter materials are incorporated to improve fuel efficiency, stability and cargo weight. Here we will focus on one of the most important design features, the evolution of axle configurations.

Types of Tank Container Chassis

- Spread Axle Chassis
- Tri-Axle Chassis
- Tri-Axle Slider Chassis
- Hi-lo combo Chassis
- Z-Chassis
- Standard 20/40-foot container Chassis

**ISO tank chassis differ from the standard container chassis as they are drop frame designs for stability.



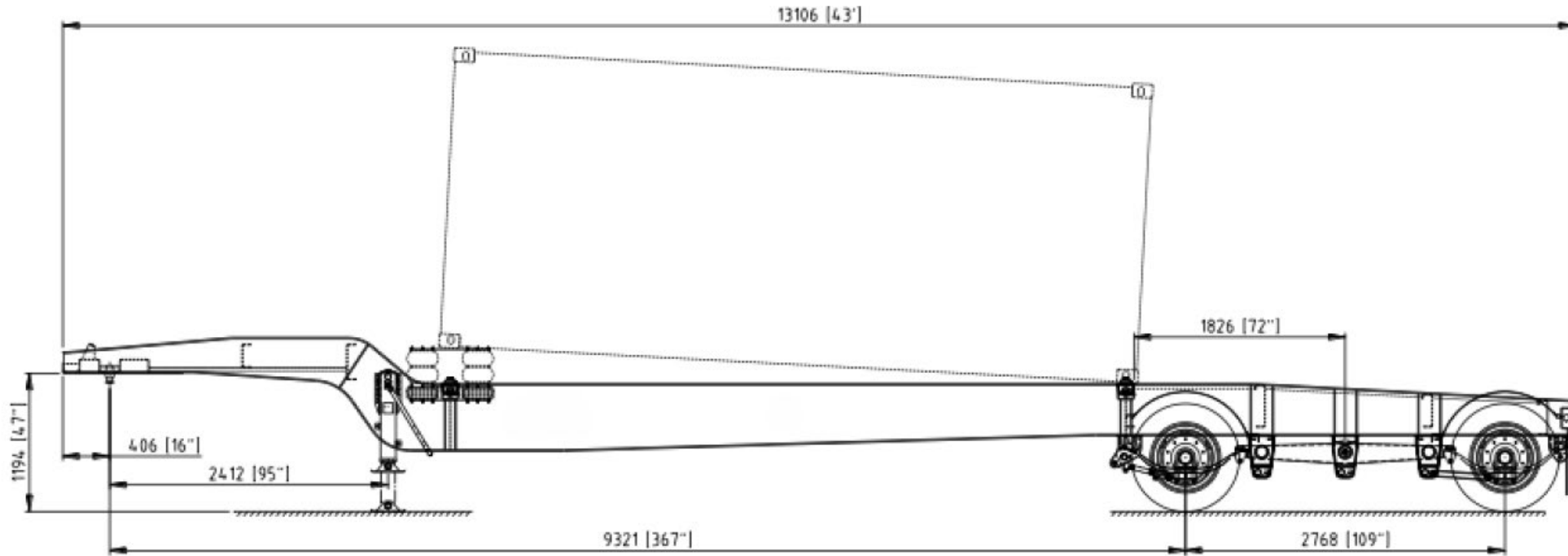
Axle configurations and what type of chassis is needed?

- **Spread Axle Chassis**

- The spread axle chassis was developed to provide additional hauling capacity over the original closed tandem configuration without the added weight of a third axle. These benefits were obtained by separating or “spreading” the axles. A wide-spread chassis evenly spreads the load weight of the cargo improving flexibility and stability during transport, even for heavier liquids.



Tank Container Dimensions





Spread Axle Chassis



Axle configurations and what type of chassis is needed?

- **Triaxle Drop Frame Chassis**
 - The quest to haul heavier loads led to the development of the tri-axle chassis. As you might guess, this configuration adds a 3rd axle and four (4) more tires. Thus, accommodating the additional weight of heavier loads by distributing the weight over the load-bearing frame and tires. However, the additional axle adds to the overall tare weight of the chassis. This additional weight and tire surface area is beneficial when transporting heavy payloads in potentially adverse weather, but it must also be considered during route planning in order to maintain compliance with bridge laws.



Triaxle Drop Frame Chassis





Axle configurations and what type of chassis is needed?

Triaxle Chassis with Extendable Slider

- Recently, an extendable slider was incorporated into the triaxle drop frame chassis model to improve operator safety. The triaxle dropframe chassis with extendable slider provides the following benefits:
 - A triaxle configuration suitable for hauling heavy payloads.
 - A 102" wide frame and lower center of gravity for improved stability.
 - An extendable slider that enables operators to hook up hoses from the ground. No climbing required.



Triaxle Chassis with Extendable Slider

Z-Chassis



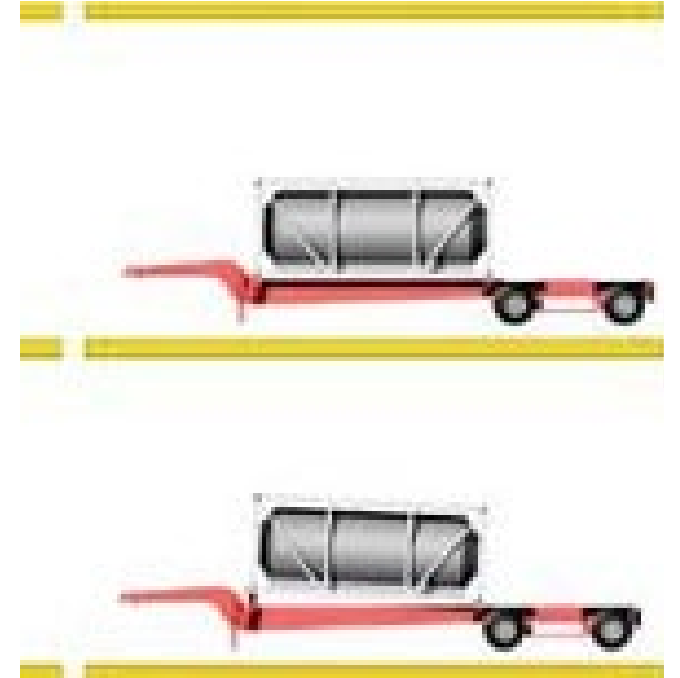


Hi-Lo Combo
Spread-Axle Chassis
- 12 pin
(carries 1 loaded 20'
tank container
or 2 empty 20' tank
containers)



Standard 20-foot container chassis





Lift kits for Rear unloading



Calculating gross weights

- ▶ Tare Weight: The weight of the empty container and chassis.
- ▶ Product weight. How many gallons and what is specific gravity?
- ▶ Truck Weight. (Ensure fuel is taken into account)
- ▶ Gross Weight: The total weight of the tank container, chassis, truck, and product.



Example:

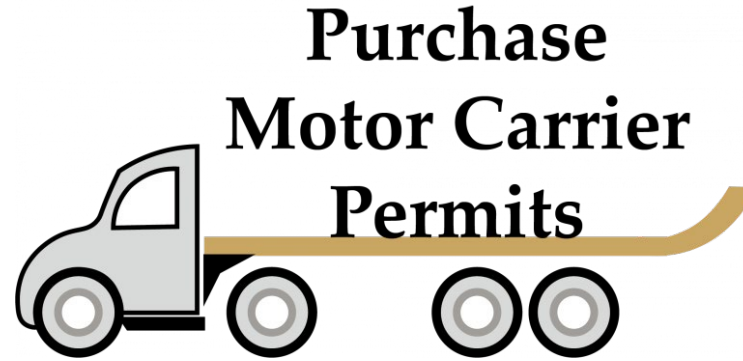
Jeffrey this is Ron Emma with Suttons...



Can I load 48,000lbs of product in Birmingham and truck it to New Orleans? I need an answer in 5 seconds I have the customer on the other line. Can you do it yes or no? Thanks, I'll call you back.

- ▶ Product weight - 48,000lbs
 - ▶ ISO Tank Tare Weight - 8,000lbs
 - ▶ Chassis tare weight - 8,000lbs
 - ▶ Truck Tare - 20,000lbs
 - ▶ Total weight - 84,000lbs
-
- ▶ Load is over 80,000lbs gross, so it's overweight, therefore other factors must be considered.

Example continued....



- ▶ Load is over 80,000 gross so it's overweight so other factors must be considered.
 - ❖ Does it need a tri-axle?
 - ❖ Does Louisiana, Mississippi, and Alabama allow overweight loads?
 - ❖ Does truck route allow for overweight loads?
 - ❖ Are there any bridge laws that will be encountered?
 - ❖ Are there travel restrictions with available permits?

Chassis Tare Weight Differences

Spread Axle Chassis - 7,600-8,000lbs

Tri-Axle Chassis - 9,500lbs

Tri-Axle Slider Chassis - 9,500lbs

Hi-lo combo Chassis - 9,000lbs

Z-Chassis - 8,500lbs

Standard 20/40-foot container Chassis - 6,600lbs

***Above weights are approximates and averages and may vary by +/- 3%*

Panel Participants



Jeff Durham, President, IsoChem Services

Julie Gautreau, Permits Manager, Louisiana DOTD

David Hurstell, COO, Transportation Compliance Services

Violations that Can Be Found on an Intermodal Chassis

ID	Section	FedVioCode	Vio Text	Detectable during Pre-Trip?*
1	393.126	393.126	FAIL TO ENSURE INTERMODAL CONTAINER SECURED	Y
2	393.126(b)	393.126B	Damaged/missing tiedown/securement device	Y
4	393.126(c)(2)	393.126C2	All corners of chassis not secured	Y
5	393.126(c)(3)	393.126C3	Front and rear not secured independently	Y
9	393.19	393.19	No/defective turn/hazard lamp as required	Y
10	393.201(a)	393.201A	FRAME CRACKED / LOOSE / SAGGING / BROKEN	Y
11	393.201(c)	393.201C	Frame rail flange bent/cut/notched other than by vehicle manufacturer	Y
12	393.201(d)	393.201D	FRAME ACCESSORIES IMPROPERLY ATTACHED	N
13	393.201(3)	393.201E	Prohibited holes drilled in frame rail flange	N
14	393.205(a)	393.205A	Wheel / rim cracked or broken	Y
15	393.205(b)	393.205B	Stud/bolt holes elongated on wheels	Y
16	393.205(c)	393.205C	Wheel fasteners loose and/or missing	Y
17	393.207(a)	393.207A	Axle positioning parts defective / missing	N
18	393.207(b)	393.207B	Adjustable axle locking pin missing/disengaged	Y
19	393.207(c)	393.207C	Leaf spring assembly defective / missing	N
20	393.207(d)	393.207D	Coil spring cracked and/or broken	N
21	393.207(f)	393.207F	Air suspension pressure loss	N
22	393.207(g)	393.207G	NO / DEFECTIVE AIR SUSPENSION EXHAUST CONTROL	N
23	393.23	393.23	REQUIRED LAMP NOT POWERED BY VEHICLE ELECTRIC	Y
24	393.25(a)	393.25A	Improper Lamp Mounting	N
25	393.25(b)	393.25B	Lamps are not visible as required	Y
26	393.25(e)	393.25E	Lamp not steady burning	Y
27	393.25(f)	393.25F	Stop lamp violations	Y
28	393.26	393.26	Requirements for reflectors	Y
29	393.28	393.28	Improper or no wiring protection as required	Y
30	393.40	393.40	Inadequate brake system on a CMV	N
31	393.41	393.41	No or defective parking brake system on CMV	N
32	393.42	393.42	No brakes as required - Explain:	S
33	393.43	393.43	No/improper breakaway or emergency braking	N
34	393.43(d)	393.43D	No or defective automatic trailer brake	N

ID	Section	FedVioCode	Vio Text	Detectable during Pre-Trip?*
38	393.47(a)	393.47A	INADEQUATE BRAKES FOR SAFE STOPPING (Brake components)	N
39	393.47(c)	393.47C	MIS-MATCHED SLACK ADJUSTER EFFECTIVE LENGTH	N
40	393.47(e)	393.47E	CLAMP/ROTO TYPE BRAKE(S) OUT-OF-ADJUSTMENT	N
41	393.47(f)	393.47F	WEDGE TYPE BRAKE(S) OUT-OF-ADJUSTMENT	N
42	393.47(g)	393.47G	INSUFFICIENT DRUM/ROTOR THICKNESS	N
43	393.48(a)	393.48A	Inoperative/defective brakes	S
44	393.50(d)	393.50D	NO/DEFECTIVE AIR RESERVOIR DRAIN VALVE	N
45	393.53(b)	393.53B	CMV manufactured after 10/19/94 has an automatic airbrake adjustment system that fails to compensate for wear	N
46	393.53(c)	393.53C	No or Defective Brake Adjustment Indicator on Air Brake System for vehicle manufactured after 10/19/1994	N
47	393.55(e)	393.55E	No or Defective ABS Malfunction Indicator Lamp for trailer manufactured after 03/01/1998	Y
50	393.75(a)	393.75A	Flat tire or fabric exposed	Y
51	393.75(a)(1)	393.75A1	Tire-ply or belt material exposed	Y
52	393.75(a)(2)	393.75A2	Tire-tread and/or sidewall separation	Y
53	393.75(a)(3)	393.75A3	Tire-flat and/or audible air leak	Y
54	393.75(a)(4)	393.75A4	Tire-cut exposing ply and/or belt material	Y
55	393.75(h)	393.75H	Under Inflated Tire	N
56	393.75(c)	393.75C	Tire-other tread depth less than 2/32 of inch	Y
57	393.75(f)	393.75F	Weight carried exceeds tire load limit	Y
58	393.9	393.9	Inoperable Required Lamp	Y
59	393.9	393.9T	Inoperable Tail Lamp	Y
60	393.9	393.9TS	Inoperative Turn Signal	Y
61	396.17(c)	396.17C	Operating a CMV without periodic inspection	N
62	396.3(a)(1)	396.3A1	Inspection/repair and maint parts & accssries	N
63	396.3(a)(1)	396.3A1B	Brakes (general) Explain:	S
64	396.3(a)(1)	396.3A1BA	Brake-out of adjustment	N
65	396.3(a)(1)	396.3A1BD	Brake-defective brake drum	N
66	396.3(a)(1)	396.3A1BOS	BRAKES OUT OF SERVICE: THE NUMBER OF DEFECTIVE BRAKES IS EQUAL TO OR GREATER THA	N
67	396.3(a)(1)	396.3A1T	Tires (general)	Y
68	396.5(a)	396.5A	FAILING TO ENSURE THAT VEHICLE IS PROPERLY LUBRICATED	S
69	396.5(b)	396.5B	Oil and/or grease leak	S

ID	Section	FedVioCode	Vio Text	Detectable during Pre-Trip?*
70	396.9(d)(2)	396.9D2	Carrier or IEP Failed to correct defects noted on previous inspection	N
76	393.70(b)(1)(ii)	393.70B1II	Defective / Improper fifth wheel assembly upper half	Y
101	393.45	393.45UV	Brake Tubing and Hose Adequacy Under Vehicle	N
102	393.45	393.45PC	Brake Tubing and Hose Adequacy - Connections to Power Unit	Y
103	393.45(b)(2)	393.45B2UV	Brake Hose or Tubing Chafing and/or Kinking Under Vehicle	N
104	393.45(b)(2)	393.45B2PC	Brake Hose or Tubing Chafing and/or Kinking - Connection to Power Unit	Y
105	393.45(d)	393.45DLUV	Brake Connections with Leaks Under Vehicle	Y
106	393.45(d)	393.45DLPC	Brake Connections with Leaks - Connection to Power Unit	Y
107	393.45(d)	393.45DCUV	Brake Connections with Constrictions Under Vehicle	N
108	393.45(d)	393.45DCPC	Brake Connections with Constrictions - Connection to Power Unit	Y
109	393.48(a)	393.48A-BMBC	Brakes - Missing or Broken Components	N
110	393.48(a)	393.48A-BCM	Brakes - Hydraulic Brake Caliper movement exceeds 1/8" (0.125") (3.175 mm)	N
111	393.48(a)	393.48A-BRMMC	Brakes - Rotor (disc) metal-to-metal contact	N
112	393.48(a)	393.48A-BSRFS	Brakes - Severe rusting of brake rotor (disc)	N
113	396.5(a)	396.5A-HNLIW	Hubs - No visible or measurable lubricant showing in the hub - inner wheel	N
114	396.5(a)	396.5A-HNLOW	Hubs - No visible or measurable lubricant showing in the hub - outer wheel	Y
115	396.5(b)	396.5B-HLIW	Hubs - Oil and/or Grease Leaking from hub - inner wheel	N
116	396.5(b)	396.5B-HLOW	Hubs - oil and/or Grease Leaking from hub - outer wheel	Y
117	396.5(b)	396.5B-HWSLIW	Hubs - Wheel seal leaking - inner wheel	N
118	396.5(b)	396.5B-HWSLOW	Hubs - Wheel seal leaking - outer wheel	Y
119	393.42(a)	393.42A-BM	Brake - Missing required brake.	Y
120	393.42(a)	393.42A-BMAW	Brake - All wheels not equipped with brakes as required.	Y
121	393.42(a)	393.42A-BM-TSA	Brake - Missing on a trailer steering axle.	Y
122	390.21(g)(2)	390.21G2	IEP offering/interchanging intermodal equipment not identified as required.	N
123	390.21(g)(3)	390.21G3	IEP failing to mark/identify equipment with "USDOT" Number as required.	N
124	392.2	392.2RG	State vehicle registration or License Plate violation	N
125	392.2	392.2WC	Wheel (Mud) Flaps missing or defective	Y
126	392.2	392.2IRP	IRP Apportioned Tag or Registration Violation	N

***Detectable during Pre-Trip?**

All violations on this list can be found on an intermodal chassis. The values in this column indicate if the violation *could be* detected during a routine Driver Pre-Trip Inspection as described in 392.7(b). The values in this column are: Y = Yes, the driver should be able to detect this violation, under normal conditions, without going under the vehicle. N = No, a driver would not normally be able to detect this violation. S = Indicates selection of this violation will prompt the user to select a more specific violation

Questions for Panel?



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