

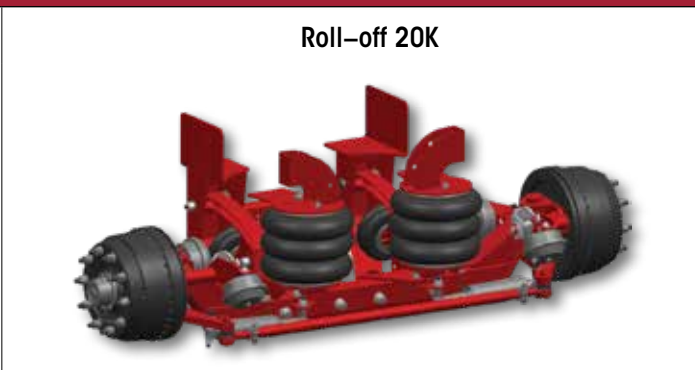
HENDRICKSON LIFT AXLE ORDERING GUIDE: COMPOSILITE® EXS/SC TRUCK: 20K (STEERABLE)

This ORDERING GUIDE is intended to assist you in the selection of Hendrickson COMPOSILITE® EXS/SC Lift Axles for Truck (20K, Steerable). For comprehensive information on other available Hendrickson models, options and pricing, contact HENDRICKSON CUSTOMER SERVICE at 800.660.2829 (US and Canada) or liftaxle@hendrickson-intl.com. Your Hendrickson Customer Service Representative can help you complete this form.

Company:	Name:	Telephone:
Email:	Fax:	Location:

WARNING! FAILURE TO PROVIDE ALL OF THE INFORMATION REQUESTED IN THIS FORM WILL PREVENT HENDRICKSON FROM PROVIDING YOU WITH A SUSPENSION MODEL CONFIGURATION AND PRICE QUOTE. EACH STEP IN THIS FORM REQUIRES YOUR INPUT!

STEP 1: PLEASE SELECT THE REQUIRED MOUNTING TYPE AND AXLE CAPACITY:



STEP 2: PLEASE INDICATE IF THIS IS A ROLL-OFF APPLICATION:

ROLL-OFF?	YES:	NO:
IF YES, WHERE DO HYDRAULIC CYLINDERS ATTACH TO THE FRAME? SELECT BELOW:		
NEAR CAB:	NEAR DRIVES / TANDEM:	

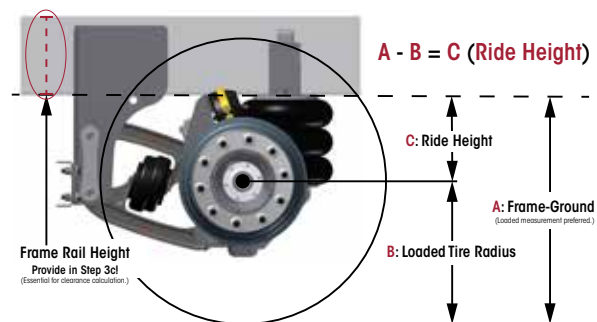
STEP 3: PLEASE SELECT THE REQUIRED BRAKE TYPE:

Drum Brakes	Bendix ADB22x Air Disc Brakes
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STEP 4-a: ESSENTIAL RIDE HEIGHT INFORMATION:

Steps 4b and 4c that follow this step are **CRITICAL** for determining proper ride height and to select the right suspension for your vehicle and your operating conditions.

PLEASE REFER TO THE GRAPHIC TO THE RIGHT AND ANSWER **ALL** OF THE QUESTIONS IN STEP 4B AND STEP 4C:



STEP 4-b: TO CALCULATE RIDE HEIGHT, PLEASE PROVIDE US WITH ALL OF THE FOLLOWING INFORMATION:

Vehicle's Primary Suspension Type:	Air Ride	Chalmers	HAULMAAX®	Mechanical: M-Ride	or T-Ride	or Other
Provide dimensions where applicable (loaded or unloaded):	Loaded: _____		Unloaded: _____			
Preferred Tire Size (example 315/80R 22.5):	_____					

WARNING: FAILURE TO PROVIDE ALL OF THE INFORMATION REQUESTED ABOVE WILL PREVENT HENDRICKSON FROM PROVIDING YOU WITH A SUSPENSION MODEL CONFIGURATION AND PRICE QUOTE. ALL FIELDS IN STEP 3B ARE REQUIRED!

STEP 4-c: TO VERIFY CLEARANCE FOR YOUR APPLICATION, PROVIDE US WITH THE FOLLOWING INFORMATION:

¹ Frame Rail Height:	_____	Is this a "Pusher" application (lift axle in front of drive axle)?:	YES	NO
At axle center location, measure from the bottom of frame rail to bottom of the ² FULLY ARTICULATED DRIVELINE:		_____		

¹Frame Rail Height is used in the calculation to assure proper tire clearance in relation to the truck's body, etc. Refer to the graphic in Step 3a to understand what is "Frame Rail Height" and where to measure it.

Notes: ²This is essential information! For warnings about and detailed instructions for this procedure, see pages 4 to 6 of this Ordering Guide.

WARNING: FAILURE TO PROVIDE ALL OF THE INFORMATION REQUESTED ABOVE WILL PREVENT HENDRICKSON FROM PROVIDING YOU WITH A SUSPENSION MODEL CONFIGURATION AND PRICE QUOTE. ALL FIELDS IN STEP 3B ARE REQUIRED!

STEP 5: PLEASE SELECT FRAME WIDTH/ADJUSTABILITY OPTIONS (SELECT ONE):

33.5" Frame Width	34.0" Frame Width	34.5" Frame Width	
Adjustable built to 34.0" with included spacers for full range from 33.5" to 34.5". Also includes ride-height spacers.			

STEP 6-a: PLEASE SELECT WHEEL-END (HUB & DRUM) OPTIONS:

Do you require WHEEL ENDS?	YES	NO	If "No", Go to Step 6 Below.
Do you require ABS READY?*	YES	NO	ABS Sensor Kit part number is R-008245-1. Please order separately.

STEP 6-b: CHOOSE HUB OPTIONS FOR DRUM BRAKES:

Choose ONE Lubricant Option:	Oil 80w/90	Oil 75w/90 (Synthetic)	Semi-Fluid Grease
Hub Material:	Ductile Iron is the only hub material choice for drum brakes.		

STEP 6-c: CHOOSE HUB OPTIONS FOR BENDIX 20K AIR DISC BRAKES (OIL ONLY):

Choose ONE Lubricant Option:	Oil 80w/90	Oil 75w/90 (Synthetic)	
Choose Hub Material:	Ductile Iron	Aluminum	Ductile Iron Aluminum

STEP 7: PLEASE SELECT AN OPTION FOR DUST SHIELDS:

Dust Shields Installed	No Dust Shields
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STEP 8: PLEASE SELECT AN OPTION FOR LOCK-STRAIGHT:

Lock-Straight Components INSTALLED	Lock-Straight Components NOT INCLUDED
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Notes: All COMPOSILITE EXS axles are shipped Lock-Straight ready. A bolt-on Lock-Straight kit can be added at any time. Please note that "Lift and Lock Straight Reverse" is the only option for 20K suspensions.

STEP 9: PLEASE SELECT AN OPTION FOR BRAKE CHAMBERS:

Drum Brakes	Air-Disc Brakes
Type 24, 2.50" Stroke	Type 18: Bendix Disc
Type 30, 3.00" Stroke	
Type 30/30, 2.50" Stroke	
Type 24, 3.00" Stroke	
Type 24/24, 2.50" Stroke	
Type 24/30, 3.00" Stroke	

STEP 10: PLEASE SELECT A PRE-PLUMB OPTION:

Not pre-plumbed	Pre-plumbed with <u>no</u> tank; brake lines only
Pre-plumbed with tank	Pre-plumbed with air-line kit

STEP 11: PLEASE SELECT OPTIONS FOR AIR CONTROL KIT SPECIFICATIONS (SOLD SEPARATELY):

SELECT CONTROL MOUNTING STYLE (CHOOSE ONE OPTION):			
Inside cab	Outside on Frame	Maryland Spec.	No Control Requested
IF OUTSIDE ON FRAME (CHOOSE ONE OPTION):			
Steel Box	Composite Box		

Notes: "LIFT & LOCK STRAIGHT REVERSE" IS THE ONLY OPTION FOR 20K SUSPENSIONS.

NOTES: If you have an application or requirement not covered by Ordering Guide H867, please explain below; a Hendrickson Technical Support representative will contact you shortly.

FOR STEP 3c: MEASURING A FULLY ARTICULATED DRIVELINE

The proper selection and configuration of your Hendrickson auxiliary lift-axle suspension system is essential to the safe and efficient operation of your vehicle. Variance in driveline and truck design require that owner-operators pay particular attention to a number of pre-sale factors that will ultimately determine how well your vehicle and lift axle will work together. This publication will focus on the important issue of driveline clearance. Should you have any questions regarding the following guidelines and procedures, please contact **Hendrickson Technical Support & Warranty** liftaxletech@hendrickson-intl.com

WARNING

SAFETY PRECAUTIONS

PLACE THE VEHICLE ON A LEVEL FLOOR AND CHOCK THE FRONT WHEELS TO HELP PREVENT THE VEHICLE FROM MOVING. RAISING THE TRUCK FOR THE PROCEDURES OUTLINED IN TP-H854 REQUIRES THE USE OF PROPER LIFTING AND JACK EQUIPMENT. DO NOT WORK AROUND OR UNDER A RAISED VEHICLE SUPPORTED ONLY WITH FLOOR JACKS OR OTHER LIFTING DEVICES. FAILURE TO DO SO CAN CAUSE DEATH, PERSONAL INJURY OR DAMAGE TO COMPONENTS.

IMPORTANT NOTES!

Technical Procedure **TP-H854** has as its goal to assist you in providing measurements related to driveline clearance that are required in Hendrickson Ordering Guides and when communicating with Hendrickson Sales and Technical Service personnel. This publication demonstrates the proper method of measuring the distance from the bottom of a truck's frame rail to the bottom of a FULLY ARTICULATED DRIVELINE at the intended location of the lift axle's center point. A FULLY ARTICULATED DRIVELINE is understood as the maximum travel of the truck's driveline, which can be achieved under all operating conditions.

CAUTION

IMPROPER MEASUREMENT CAN LEAD TO DAMAGE TO YOUR VEHICLE AND LIFT AXLE!

In order to properly determine this measurement before a suspension is ordered, Hendrickson requires that a truck with **DUAL DRIVE AXLES** be lifted by its rear drive axle until the suspension "bottoms out", i.e. the rear drive axle lifts off of the ground and the front drive axle tips forward and then also leaves the ground, thereby allowing the driveline to reach its maximum travel. **ONLY THEN CAN AN ACCURATE MEASUREMENT BE COMPLETED.**

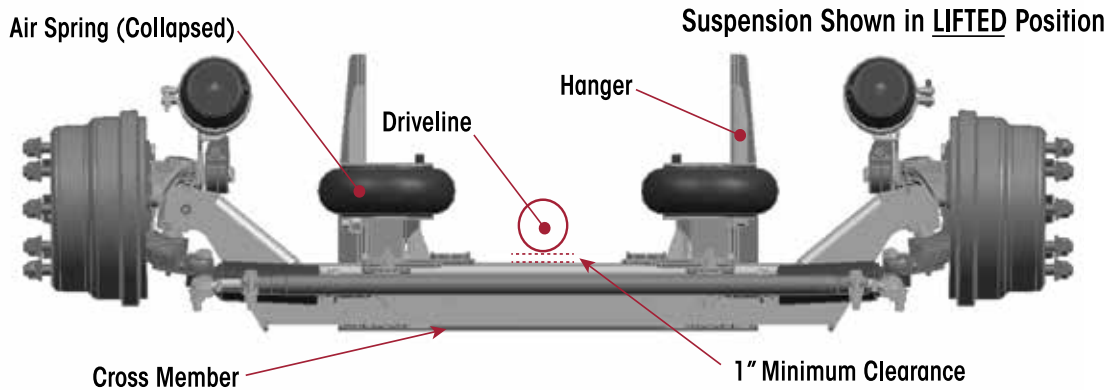
If your truck has a **SINGLE DRIVE AXLE**, you must lift the truck by its frame to allow the suspension to extend until the drive tire is off of the ground.

Another option is to calculate this measurement by utilizing data from the manufacturer of your truck, keeping in mind that you need the driveline measurement at the intended location of the lift axle's center point.

For demonstration purposes, **TP-H854** displays a new dual drive axle truck with bare rails in order to clearly show the procedures for measuring a FULLY ARTICULATED DRIVELINE. Variance in truck and suspension design or installed equipment does not change the principles of these technical procedures.

DRIVELINE CLEARANCE BASICS

In the figure on page 5, the clearance between the driveline and the axle weldment must be a minimum of 1 inch when the lift axle is in the raised position. A one-inch clearance is the minimum recommended if (!) we know the maximum travel of the truck's FULLY ARTICULATED DRIVELINE. Please pay particular attention to the following guidelines and procedures to assure proper measurement of this essential dimension.

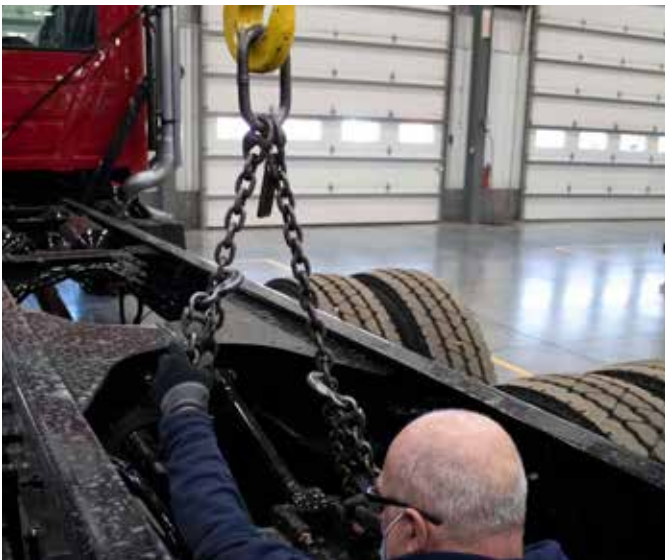


MEASUREMENT PROCEDURES

Required Tools and Materials:

- Truck jack or overhead crane
- Wheel blocks
- Measuring tape

1. You must determine the future location for the lift axle suspension system (i.e. the location of its axle center). Please refer to your local DOT or <https://www.hendrickson-intl.com/Bridge-Laws> for assistance with this.
2. Once you have determined the location for the lift axle, mark the axle's center point on the outside rail of the truck; this mark is where you will measure the fully articulated driveline in the next steps.
3. Block the truck's front wheels to prevent movement.
4. You are now ready to lift the truck's rear drive axle to achieve the driveline's maximum travel. In the following photographs, the truck's rear drive axle is being lifted by a chain and crane sufficient for the weight of the truck. Whatever method you employ, make sure that your lifting equipment is rated for the weight and conditions.



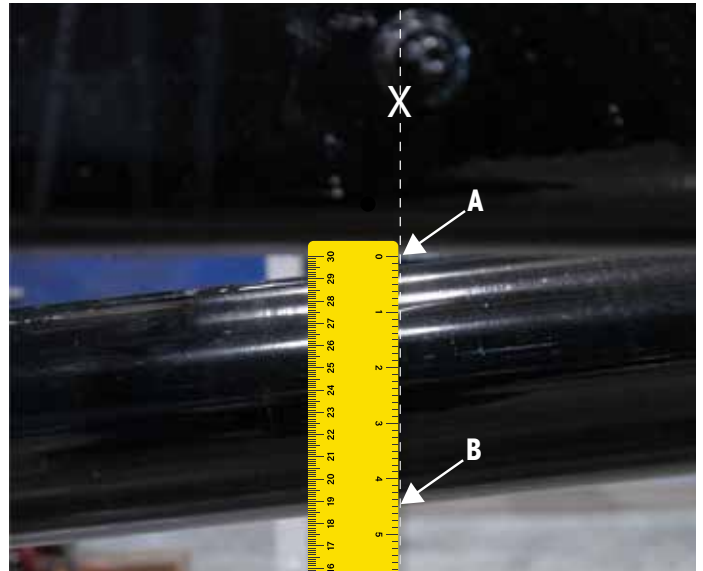
5. Remember, the wheels of the front drive axle must leave the ground in order for the driveline to "bottom out". Note: in the photo above the front tires are about 1/2 inch off of the ground. The "bottom out" point of your driveline can vary.
6. Next, at the marked future location of the lift axle's axle center ("X"), measure the distance from the bottom of the frame rail to the bottom of the driveline as seen in the photo on the next page:

In the image to the right, "X" is the marked position on the truck's side rail of the axle center of the lift axle suspension that will be installed.

The measurement we are taking is from the bottom of the truck's rail to the bottom of the driveline.

Align the edge of your ruler on the center point of the "X". The measurement will be taken from point A to point B.

For demonstration purposes, the photo to the right shows a FULLY ARTICULATED DRIVELINE with a drop of 4.5 inches.



7. Record this measurement for when you fill out **Step 3c** of this Ordering Guide or when communicating with a Hendrickson Technical Service or Sales representative regarding pre-sale specifications.

FOR STEP 5: IMPORTANT INFORMATION FOR HENDRICKSON CUSTOMERS:

WHEEL-END & HUB OPTIONS: ANY LIFT AXLE AND SUSPENSION SYSTEM'S WEIGHT RATING IS LIMITED BY THE LOWEST RATING OF ANY CONSTITUENT COMPONENT INSTALLED INTO OR ONTO THAT SYSTEM. THE TIRE AND RIM SPECIFICATIONS, ORIENTATION AND LOAD LOCATION CAN ALSO AFFECT THE RATING OF THE HUBS AND HENCE THE AXLE AND SUSPENSION SYSTEM RATING AS A WHOLE. IT IS THE INSTALLER'S RESPONSIBILITY TO ENSURE THAT THE AXLE AND SUSPENSION SYSTEM RATING (WHICH MAY BE REDUCED, AS INDICATED ABOVE) IS NOT EXCEEDED. FAILURE TO DO THIS CAN RESULT IN DAMAGE TO THE AXLE AND SUSPENSION SYSTEM. A PARTICULAR CONCERN IS THE POSSIBLE "DE-RATING" OF SUSPENSION CAPACITY WHEN USING OFFSET (DISHED-OUT OR DISHED-IN) WHEELS, A SITUATION THAT CAN PUT AN EXCESSIVE LOAD ON THE BEARINGS AND SPINDLE, WHICH CAN LEAD TO REDUCED SERVICE LIFE AND MECHANICAL FAILURES. WHEN UTILIZING HUBS, WHEELS OR BEARINGS NOT SUPPLIED BY OR RECOMMENDED BY HENDRICKSON OR WHEN REPLACING HENDRICKSON-SUPPLIED HUBS AND/OR BEARINGS WITH COMPONENTS NOT SUPPLIED BY HENDRICKSON, IT IS THE BUYER'S RESPONSIBILITY TO CONSULT WITH THE SUPPLIERS OF THOSE COMPONENTS AND ALL ASSOCIATED SUPPLIER LITERATURE TO ASSURE THAT THE RATED CAPACITY OF THE AXLE AND SUSPENSION SYSTEM OR ITS SUB-ASSEMBLIES WILL NOT BE EXCEEDED.

HENDRICKSON CUSTOMER SERVICE: IF YOU HAVE QUESTIONS ABOUT THIS ORDERING GUIDE OR THE **EXF NON-STEER LIFT AXLES** FOR TRUCK APPLICATIONS, PLEASE CONTACT HENDRICKSON TECHNICAL SERVICES BY PHONE 800.660.2829 OR E-MAIL: LIFTAXLETECH@HENDRICKSON-INTL.COM.

HENDRICKSON GENUINE PARTS: FOR LONG SERVICE LIFE AND OPTIMAL PERFORMANCE, USE ONLY **HENDRICKSON GENUINE PARTS** WHEN SERVICING YOUR LIFT-AXLE SUSPENSION SYSTEM.

Actual product performance may vary depending upon vehicle configuration, operation, service and other factors.

All applications must comply with applicable Hendrickson specifications and must be approved by the respective vehicle manufacturer with the vehicle in its original, as-built configuration. Contact Hendrickson for additional details regarding specifications, applications, capacities, and operation, service and maintenance instructions.

Call Hendrickson at **800.660.2829** or **800.668.5360** in Canada for additional information.



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