

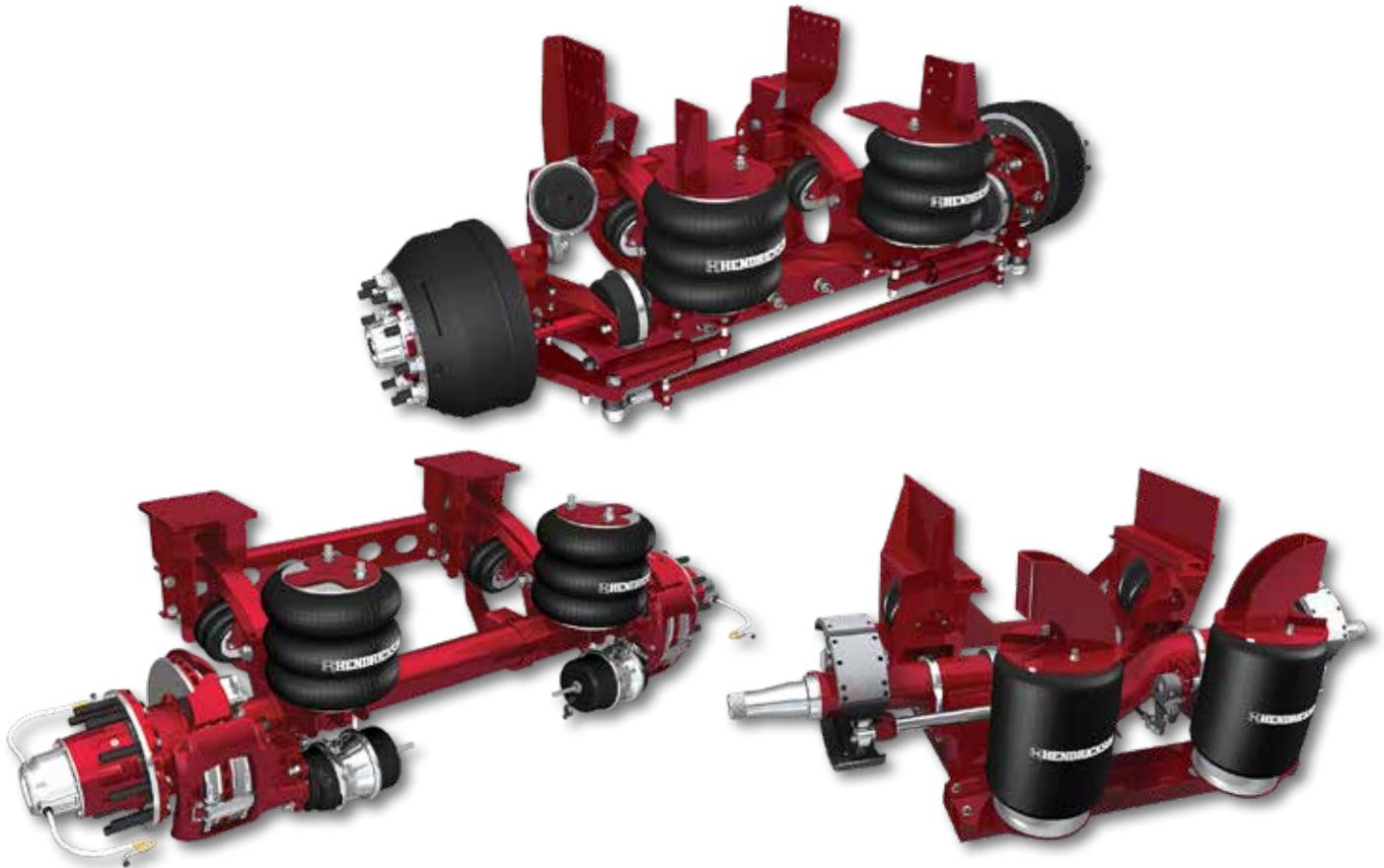
# **H** BRAKE CERTIFICATIONS

SUBJECT: Certifications for Air-Actuated Brakes

LIT NO: H856

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REV: B



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## Determining Brake Ratings

Brake ratings are determined by the selection of several components including brake model and lining, brake chamber size and stroke, slack adjuster length and tire static loaded radius (SLR). For optimum performance, brakes should be selected based upon the maximum required load that is needed for the application and no higher. Hub, suspension, axle and tire ratings may all differ on a given suspension, and it is the minimum rated component of this group that determines the gross axle weight rating (GAWR).

Suspension components may be specified at higher ratings than legal load limits for increased durability purposes; however, higher rated brakes should only be selected when running over weight or permitted loads. Using an overrated brake lining on your vehicle can lead to excess brake torque which can result in premature tire and brake wear, noise and suspension hop. Contact Hendrickson Technical Service for assistance in specifying the appropriate brake size for your application.

## Reading the Tables

BRAKE MODEL	LINING	BRAKE RATING	CHAMBER SIZE	SLACK LENGTH	TIRE SLR
<p>Entries in this column indicate the brake model, size (drum diameter and shoe width) and identifies the Friction Material Standards Institute (FMSI) code for the brake.</p>	<p>Entries in this column indicate the lining manufacturer's name and lining formula designation.</p>	<p>Entries in this column indicate the highest and lowest Gross Axle Weight Rating (GAWR) in pounds for the given lining certification.</p> <p>The given certification is valid at any GAWR at or between the two stated values.</p>	<p>Entries in this column indicate size of the air chamber required to meet the certification for the given lining certification.</p> <p>The first number is the service chamber area (square inch).</p> <p>*The second number is the Parking Chamber area # (square inch).</p> <p>Minimum rated stroke is listed in [brackets].</p>	<p>Entries in this column indicate length of the slack adjuster in inches required to meet the certification for the given lining certification.</p> <p>Note: There may be splits between a given GAWR and the slack length necessary to meet the certification.</p>	<p>Entries in this column indicate highest and lowest static loaded radius (SLR) for the tires in inches for the given lining certification.</p> <p>Note: There may be splits between a given GAWR and the tire SLR range necessary to meet the certification.</p>
<p>*Complying with <b>Parking Brakes PAR.5.6.1</b> only applies to listings that indicate a parking chamber.</p>					

**Example:** (Always read across the table for valid combinations)

BRAKE MODEL	LINING	BRAKE RATING RANGE (lbs.)	CHAMBER SIZE	SLACK LENGTH	TIRE SLR
<p>HENDRICKSON 16.5" x 7" HXS® (FMSI 4707)</p>	H20167XF	17,000 – 20,000	<p>30/30 [2.5" stroke]</p>	<p>5.5" or 6.0"</p>	<p>17.0" – 20.8"</p>
	H23167XF	17,000 – 23,000			

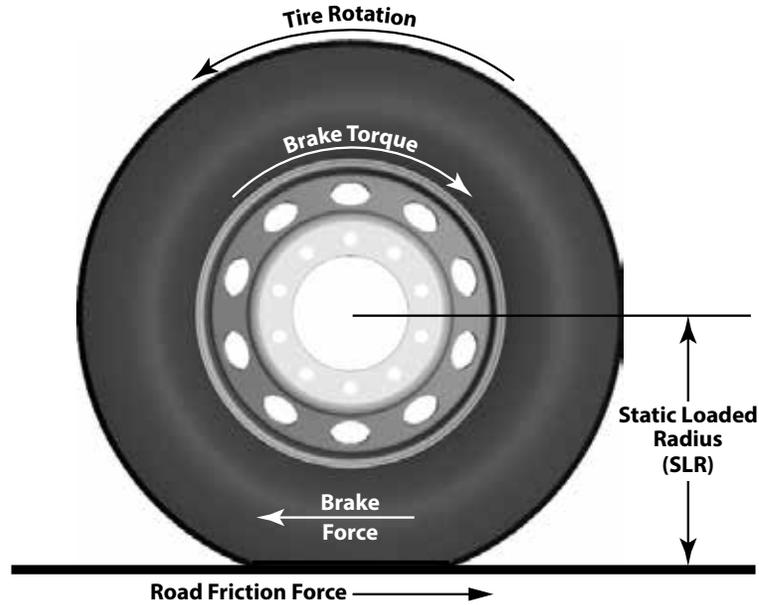
### Example interpretations of the table entries:

- 16.5" x 7" HXS using H20167XF at 17,000 GAWR with 30/30 chamber, 5.5" slack and 20.8" SLR is valid.
- 16.5" x 7" HXS using H20167XF at 20,000 GAWR with 30/30 chamber, 5.5" slack and 19.3" SLR is valid.
- 16.5" x 7" HXS using H20167XF at 20,000 GAWR with 30/30 chamber, 5.5" slack and 17" SLR is valid.
- 16.5" x 7" HXS using H20167XF at 17,000 GAWR with 30/30 chamber, 6" slack and 17" SLR is valid.



### Static Loaded Radius (SLR)

Brake lining, chamber size and stroke, and slack adjuster size directly affect the amount of **torque** a brake can achieve. Brake **torque** is reacted through the wheel and tire, therefore the tire size will impact how much of that torque is converted to brake **force**. The static loaded radius (SLR) is the distance from the center of the axle to the ground under maximum rated load when the tire is inflated to the recommended pressure. For a given brake **torque**, as SLR increases, brake **force** decreases. It is important to ensure that you are using the appropriate tires and brake components for the required brake rating.



The charts below summarize standard on-highway tire sizes and the typical static loaded radius (SLR). Please consult the tire manufacturer for the exact SLR for the size, tread and load range of your specific tire.

RIM SIZE	TIRE SIZE	STATIC LOAD RADIUS (SLR)
17.5	9R17.5	15.4"
	10R17.5	15.6"
	215/75R17.5	14.1" – 14.2"
	235/75R17.5	14.3" – 14.7"
	245/70R17.5	14.2" – 14.5"
19.5	245/70R19.5	15.3"
	265/70R19.5	15.7"
	285/70R19.5	16.1" – 16.2"
	445/45R19.5	16.3"
22.5	11R22.5	19" – 19.3"
	255/70R22.5	16.9" – 17.1"
	275/70R22.5	17.4"

RIM SIZE	TIRE SIZE	STATIC LOAD RADIUS (SLR)
22.5	275/80R22.5	18.4" – 18.6"
	295/75R22.5	18.5" – 18.7"
	385/55R22.5	18.1"
	385/65R22.5	19.5"
	425/65R22.5	20.3"
	445/65R22.5	20.8"
	445/50R22.5	18.1" – 18.6"
24.5	455/55R22.5	19.6" – 19.4"
	11R24.5	20" – 20.3"
	275/80R24.5	19.1" – 19.2"
	285/75R24.5	19" – 19.5"



## FMVSS-121 / CMVSS-121 Brake Certification — Drum Brakes

Federal Motor Vehicle Standards specify that the original equipment manufacturer (OEM) is responsible for compliance to Federal Motor Vehicle Safety Standard (FMVSS-121) for air actuated brakes. In the United States, OEMs are self-certifying to the standard. In Canada, test data must be submitted to Transport Canada either directly or indirectly through the Canadian Transport Equipment Association's (CTEA) brake database (Note - CTEA database is available to CTEA members only).

As a service to our customers, Hendrickson provides this **Consolidated Certificate of Compliance** for use with Hendrickson suspension systems, and for every entry in the table Hendrickson has data showing compliance to FMVSS-121 requirements. As an additional service to Canadian customers who must provide parking test compliance data to Transport Canada, FMVSS/CMVSS-121 parking data is also available upon request for every table entry that indicates a parking chamber under chamber size. This data is a part of the CTEA database. **For certifications other than those listed in these tables, please contact Hendrickson Brake Engineering for an application specific approval.**

### 12.25" x 7.5" Brake Certificate of Compliance:

This table certifies that the Hendrickson suspension systems described below comply with the current revision of DOT 49 CFR 571.121 and Canadian Motor Vehicle Safety Standards, Service Brakes, Par.S5.4 and Parking Brakes, Par.5.6.1 when equipped as noted. **For certifications other than those listed below, please contact Hendrickson Engineering for an application-specific approval.**

Used on HLM & HLN Suspensions (17.5" Diameter Wheel):					
BRAKE MODEL	LINING	BRAKE RATING RANGE (lbs.)	CHAMBER SIZE	SLACK LENGTH	TIRE SLR
HENDRICKSON 12.25" x 7.5" HXS <sup>®1</sup> (FMSI 4692)	H20127XH	15,000 – 17,000	24/24 <sup>2</sup> [2.5" stroke]	5.5" or 6.0" <sup>3</sup>	14.3" – 15.6"
		17,000 – 20,000	30/30 [3.0" stroke]	5.5" or 6.0" <sup>3</sup>	14.3" – 15.6"

- 12.25" brakes are usually used with 17.5" wheel equipment. Users should review tractor brake configurations to assure correct brake balance.
- Do not use older Type 24 service chambers rated at 1.75" stroke.
- When 6.0" slacks are chosen, long stroke chambers are recommended.

### 325mm x 100mm Brake Certificate of Compliance:

This table certifies that the Hendrickson suspension systems described below comply with the current revision of DOT 49 CFR 571.121 and Canadian Motor Vehicle Safety Standards, Service Brakes when equipped as noted. **For certifications other than those listed below, please contact Hendrickson Engineering for an application-specific approval.**

Used on EXS08 & EXS10 Suspensions (17.5" & 19.5" Diameter Wheels):					
BRAKE MODEL	LINING	BRAKE RATING RANGE (lbs.)	CHAMBER SIZE	SLACK LENGTH	TIRE SLR RANGE
325mm X 100mm	AF / 557	6,000 – 10,000	T16	5"	14.1" – 15.3"

### 15" x 4" Brake Certificate of Compliance:

This table certifies that the Hendrickson suspension systems described below comply with the current revision of DOT 49 CFR 571.121 and Canadian Motor Vehicle Safety Standards, Service Brakes, Par.S5.4 when equipped as noted. **For certifications other than those listed below, please contact Hendrickson Engineering for an application-specific approval.**

Used on EXS13, EXF13 & Bridge Axle Suspensions (19.5", 22.5" & 24.5" Diameter Wheels):					
BRAKE MODEL	LINING	BRAKE RATING RANGE (lbs.)	CHAMBER SIZE	SLACK LENGTH	TIRE SLR RANGE
HENDRICKSON 15" X 4" FMSI 4702	WW301	12,351 – 13,500	T20	5.5"	17.2" – 20.5"
		10,000 – 12,350	T16	5.5"	17.2" – 20.5"



## 16.5" x 5" Brake Certificate of Compliance:

This table certifies that the Hendrickson suspension systems described below comply with the current revision of DOT 49 CFR 571.121 and Canadian Motor Vehicle Safety Standards, Service Brakes, Par.S5.4 when equipped as noted. **For certifications other than those listed below, please contact Hendrickson Engineering for an application-specific approval.**

### Used on HLR, HLM, FM & EXF Suspensions (22.5" & 24.5" Diameter Wheels):

BRAKE MODEL	LINING	BRAKE RATING RANGE (lbs.)	CHAMBER SIZE	SLACK LENGTH	TIRE SLR RANGE
HENDRICKSON 16.5" X 5" Standard FMSI 4524B	H15165SH	10,000 - 13,500	T16	5.5" or 6.0"	17" - 21.1"
		13,500 - 16,000	T20	5.5" or 6.0"	17" - 21.1"

## 16.5" x 6" Brake Certificate of Compliance:

This table certifies that the Hendrickson suspension systems described below comply with the current revision of DOT 49 CFR 571.121 and Canadian Motor Vehicle Safety Standards, Service Brakes, Par.S5.4 when equipped as noted. **For certifications other than those listed below, please contact Hendrickson Engineering for an application-specific approval.**

### Used on EXS20 & Alaskan Spec Suspensions (22.5" & 24.5" Diameter Wheels):

BRAKE MODEL	LINING	BRAKE RATING RANGE (lbs.)	CHAMBER SIZE	SLACK LENGTH	TIRE SLR RANGE
HENDRICKSON 16.5" X 6" FMSI 4715	WW301	15,601 - 20,000	T24	5.5"	18.1" - 21.2"
		14,001 - 15,600	T20	5.5"	18.1" - 21.2"
		12,300 - 14,000	T16	5.5"	17.4" - 18.9"

## 16.5" x 7" Brake Certificate of Compliance:

This table certifies that the Hendrickson suspension systems below comply with the current revision of DOT 49 CFR 571.121 and Canadian Motor Vehicle Safety Standards, Service Brakes, Paragraph S5.4, and Parking Brakes, Paragraph 5.6.1, when equipped as noted. **For certifications other than those listed below, please contact Hendrickson Brake Engineering for an application specific approval.** All tests were performed on 112-pound cast drums. A 120-pound heavy-duty drum is required for applications greater than 23,000 lbs.

### Used on TOUGHLIFT® Suspensions (22.5" & 24.5" Diameter Wheels):

BRAKE MODEL	LINING	BRAKE RATING RANGE (lbs.)	CHAMBER SIZE	SLACK LENGTH	TIRE SLR RANGE
HENDRICKSON 16.5" x 7" Standard (FMSI 4515)	H20167SF	17,000 - 20,000	30/30 [2.5" stroke]	5.5" or 6.0"	17" - 20.8"
	H23167SF	17,000 - 23,000			
HENDRICKSON 16.5" x 7" HXS® (FMSI 4707)	H20167XF	10,000 - 14,600	20/24 [2.5" stroke]	5.5"	17" - 21.1"
	H20167XF	17,000 - 20,000	30/30 [2.5" stroke]	5.5" or 6.0"	17" - 20.8"
	H23167XF	17,000 - 23,000			
	H23167XH	17,000 - 23,000	30/30 [2.5" stroke]	5.5" or 6.0"	17" - 20.8"
	H26167XF	23,000 - 26,000	30/30 [2.5" stroke]	6.0"	17" - 20.8"

1. When 6.0" slacks are chosen, long stroke chambers are recommended.



## 22.5" / 24.5" Air Disc Brake Certificate of Compliance

This table certifies that the Hendrickson suspension systems described below comply with the current revision of DOT 49 CFR 571.121 and Canadian Motor Vehicle Safety Standards, Service Brakes, Par.S5.4 and Parking Brakes, Par.5.6.1 when equipped as noted. **For certifications other than those listed below, please contact Hendrickson Brake Engineering for an application specific approval.**

Used on HLM & EXF12 Suspensions (22.5" & 24.5" Diameter Wheels):					
BRAKE MODEL	BRAKE ROTOR	LINING	BRAKE RATING RANGE (lbs.)	CHAMBER SIZE	TIRE SLR
HENDRICKSON MAXX22T™	415mm x 43mm Rotor	WABCO 232	17,000 – 23,000	20/24	17" – 19.3"
			17,000 – 22,400		17" – 20.3"
			17,000 – 20,000	18/24 or 20/24	17" – 20.8"
			12,200 – 13,500	14/24	17" – 21.7"
			10,000 – 12,350	14/24	17" – 20.5"
Bendix ADB22X	430mm x 45mm Rotor	BX-276	8,000 - 10,000	T14	17.2" - 21.2"
			10,001 - 11,500	T14	
			11,501 - 13,500	T16	
			13,501 - 16,000	T16	18.7" - 21.2"
			16,001 - 18,000	T18	
			18,001 - 20,000	T20	
			20,001 - 23,000	T24	
Bendix ADB22X-LT	430mm x 45mm Rotor	BX-276	10,001 - 11,000	T14	17.2" - 21.2"
			17,000 - 23,000	20/24	17" - 20.8"
REGARDLESS OF STEER / NON-STEER / TRAILER / TRUCK					



<b>Important Air Disc Application Information</b>		
<b>1.</b>	<b>Wheel and Valve Stem Packaging</b>	Great care must be taken in selecting combinations of wheel and valve stem products that are compatible with air disc brakes. OEM customers will need to review wheel-end and valve stem packaging with the selected disc brake manufacturer to confirm adequate running clearances. Hendrickson Brake Engineering can assist customers in discussions with the disc brake manufacturer.
<b>2.</b>	<b>ABS Sensors</b>	Hendrickson fully dressed air disc brake suspensions require straight ABS sensors. Depending on caliper model, ABS sensing may be via hub-mounted tone rings or rotor-mounted tone rings.
<b>3.</b>	<b>Air Chamber Selection and Vehicle Balance</b>	Default air chamber selection is based on the choice of caliper brand and lining. Additional sizes are available if necessary. Trailer OEM customers are encouraged to work with end customers to review mating tractor brake specifications and determine if combined vehicle brake balance is correct for the application. Hendrickson Brake Engineering will assist customers in discussions with the disc brake manufacturer.
<b>4.</b>	<b>Air Disc Application Form</b>	Required by air disc manufacturer for North American applications — The application approval is not required for the Hendrickson MAXX22T™ system. Application forms can be found on the last page of the product ordering guide.

*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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