LOOSE AXLE

A45 / A65 SERIES AXLE SPECIFICATIONS

LIT NO: H741
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HENDRICKSON
The World Rides On Us®

Hendrickson works closely with fleets and trailer manufacturers to create products that offer versatility in application, add reliability and provide significant cost savings.

Hendrickson offers a full line of industry-standard and low-maintenance axles to fit a variety of configurations. Options include both straight and bent tube designs, as well as various spindle configurations, capacities and track lengths, all designed and manufactured to the highest Hendrickson standards.

SERVICE NOTES

This publication provides installation instructions and information for Hendrickson axles.
Before you begin:

- Read and understand all instructions and procedures before installing any component.
- Read and observe all Caution and Warning statements to help avoid personal injury or property damage.
- Follow your company's installation and diagnostic practices.

Hendrickson reserves the right to make changes and improvements to its products and publications at any time. Consult the Hendrickson website (www.hendrickson-intl.com) for the latest version of this manual.

IMPORTANT SAFETY NOTICE

Proper installation is important to the reliable operation of the axle. The procedures recommended by Hendrickson and described in this publication are methods of performing such an installation.

The warnings and cautions should be read carefully to help prevent personal injury and to assure that proper methods are used. Improper installation can cause damage to the vehicle and other property, personal injury, an unsafe operating condition or void the manufacturer's warranty.

Carefully read, understand and follow all safety related information within this publication.

EXPLANATION OF SIGNAL WORDS

Hazard signal words (such as Danger, Warning or Caution) appear in various locations throughout this publication. Information accented by one of these signal words must be observed at all times.

DANGER — Indicates immediate hazards which will result in severe personal injury or death.

WARNING — Indicates hazards or unsafe practices which could result in severe personal injury or death.

CAUTION — Indicates hazards or unsafe practices which could result in damage to machine or minor personal injury.

IMPORTANT — An operating procedure, practice or condition that is essential to emphasize.

⚠ **WARNING: Do not modify or rework parts. Do not use substitute parts of the axle components. Use of a modified part or replacement part not authorized by Hendrickson may not meet Hendrickson's specifications and can result in failure of the part, loss of vehicle control and possible personal injury or property damage. Use only Hendrickson authorized replacement parts. Do not modify parts without authorization from Hendrickson.**

⚠ **CAUTION: A mechanic using an installation procedure or tool which has not been recommended by Hendrickson must first satisfy himself that neither his safety nor the vehicle's safety will be jeopardized by the method or tool selected. Individuals deviating in any manner from the provided instructions assume all risks of consequential personal injury or damage to equipment.**

⚠WARNING: Always wear proper eye protection and other required personal protective equipment when performing an axle installation.

⚠WARNING: Solvent cleaners can be flammable, poisonous and can cause burns. To help avoid serious personal injury, carefully follow the manufacturer's product instructions and guidelines and the following procedures:

- **Wear proper eye protection**
- **Wear clothing that protects your skin**
- **Work in a well ventilated area**
- **Do not use gasoline or solvents that contain gasoline. Gasoline can explode.**
- **Hot solution tanks or alkaline solutions must be used correctly.**
- **Follow the manufacturer's recommended instructions and guidelines carefully to help prevent personal accident or injury.**

⚠WARNING: A serious or fatal injury can occur if you...

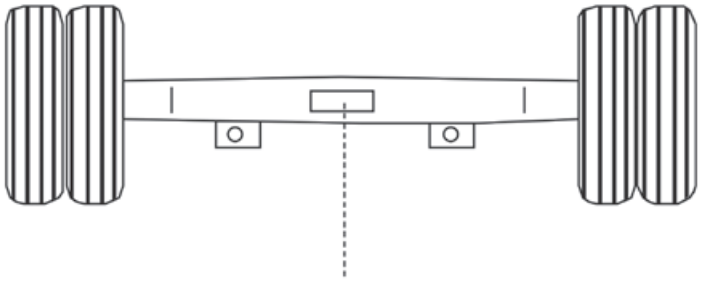
- **Lack proper training**
- **Fail to follow proper procedures**
- **Do not use proper tools and safety equipment**
- **Assemble axle components improperly**
- **Use incompatible axle components**
- **Use axles or axle components in a non-approved application**

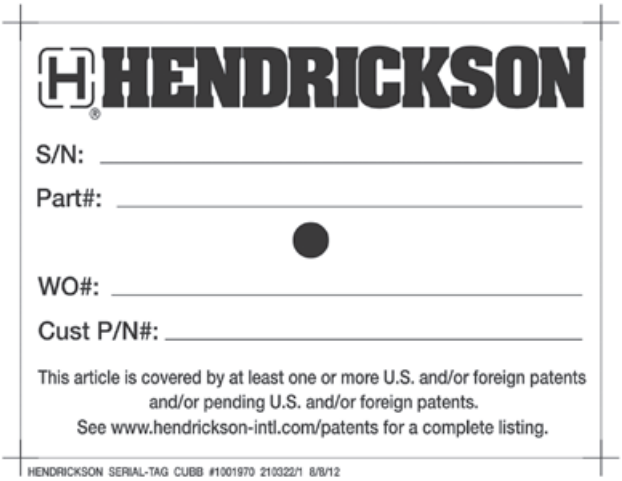
⚠WARNING: This manual contains detailed safety instructions. Read, understand and follow this manual.

- **Get proper training**
- **Learn and follow safe operating procedures**
- **Use proper tools and safety equipment**
- **Use proper components that are in good condition**

AXLE IDENTIFICATION

Refer to figure below for axle identification information.





AXLE INSTALLATION

To assure safe operation and maximum durability on parts such as brake linings and tires, it is necessary to position and install the axle properly. It is recommended that the axle assembly be installed so the cams rotate in the same direction as the wheels (figure 1).

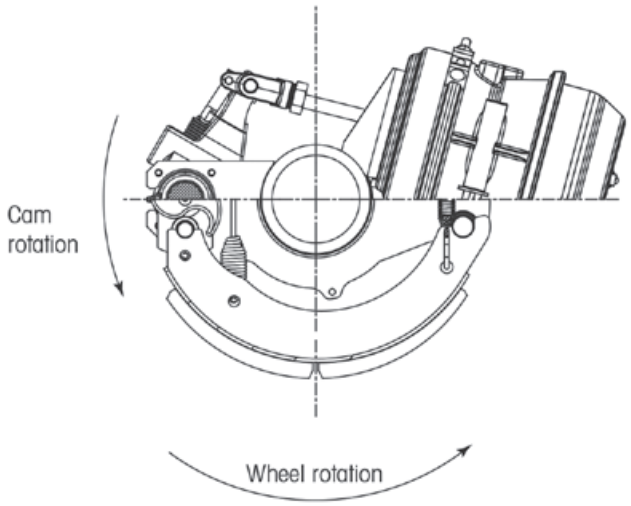


Figure 1: *Cam and wheels must rotate in the same direction*

Installation in which the camshaft rotation is opposite that of wheel rotation could cause noisy brakes, chatter, and wheel "hop". With this in mind, the axle should be ordered with the placement of air chamber and slack adjuster assemblies that will ensure the correct directional rotation of the cams when the axle is installed.

Axle attachment to the suspension should be performed to the suspension manufacturer's recommendation. For example, if the axle is to be bolted to the suspension, follow the recommended torque specifications. If the axle is to be welded to the suspension, follow the suspension manufacturer's welding recommendation, but also adhere to the welding guidelines on page 6 of this manual.

AXLE REPAIR

⚠ **WARNING: Any axle found with shipping or handling damage should not be repaired, but replaced immediately. Repair welding can be detrimental to the structural integrity of the axle beam, where the benefit of the original tube heat treatment may be nullified by the welding. An axle shaft weakened by welding could fail and cause an accident which could result in serious injury or death.**

It is the responsibility of the axle installer to adjust the brakes properly. See the recommended adjustment procedure covered in this manual.

AXLE ALIGNMENT

Proper preparation is a must for effective axle alignment. The vehicle, tools and equipment, and work site must all be appropriate for axle alignment. The process also requires a trained technician who knows the specifications.

I. VEHICLE PREPARATION

Review these steps:

1. Inspect the suspension and the axles for any obvious damage.
2. Tighten or replace, as needed, any parts that do not meet suspension or axle manufacturer criteria for serviceability.
3. Check tires for proper inflation and matching diameters.
4. Park the trailer on a smooth and level surface with the parking brakes released. After backing the trailer in, pull it forward 10 feet (3m) to a gentle stop. This will allow suspension parts to settle in a "forward running" position. Use wheel chocks to prevent injury due to accidental movement of the trailer.
5. With the brakes still released, adjust the height control valve for the proper setting (if preparing an air ride suspension) and the kingpin to the designed height by raising or lowering the landing gear legs.
6. DO NOT proceed unless the wheel bearing end play is known to be in adjustment per the bearing manufacturer and / or this manual.

II. SPECIFICATIONS

Axle alignment specifications may be stated in inches, degrees, minutes of angle (MOA or 1/60th of a degree) or mm/M. Each format can produce equivalent results. Hendrickson loose axles are built to less than ±2.5 MOA run out at each spindle.

III. ALIGNMENT

Axles should be adjusted to an alignment of no more than 5 MOA scrub with the true center of the trailer

frame if it is a single axle. If the trailer has multiple axles, each axle should be adjusted to not more than 2.5 MOA scrub relative to the front (or reference) axle (this adjustment was previously stated as a difference of not more than 1/16 inch (1.6mm) between the right and left centers of adjacent axles).

A repeated difficulty in adjusting the axle to the desired reading is most often due to a loose wheel bearing, badly worn suspension component or a combination thereof.

⚠**WARNING: Never bend the axle, by any means, to correct an alignment condition. This could weaken the axle and cause axle failure, which could result in serious injury or death.**

GENERAL WELDING GUIDELINES

In welding suspension component parts to the Hendrickson chassis or trailer axle, extreme care must be exercised to obtain their correct location and to ensure the spring-seated load bearing surfaces are parallel to each other. Any welding of additional attachments to the axle must be approved by Hendrickson to maintain warranty coverage.

It is necessary when welding to avoid the high stress areas on the tube top (compression zone) and tube bottom (tension zone). All welds should be made as close to the horizontal centerline as possible. When the axle tube is subjected to the heat from welding and then rapid cooling, the material adjacent to the weld loses its desirable ductile properties and becomes brittle. If this condition exists in the high stress areas under maximum load conditions, the life of the axle will be greatly reduced and premature fatigue failure can occur.

The welding electrodes should conform to AWS (American Welding Society), grade E-7018 (Oven-Dried) or comparable. Recommended rod size is 5/32 inch at voltage and amperage recommended by the electrode manufacturer. For maximum strength, a three-pass weld should be used.

The arc should not be broken at the end of each pass and the corners should be wrapped. The electrode should be backed up to fill in the fillet crater at the end of each pass. Thoroughly clean the weld between each pass.

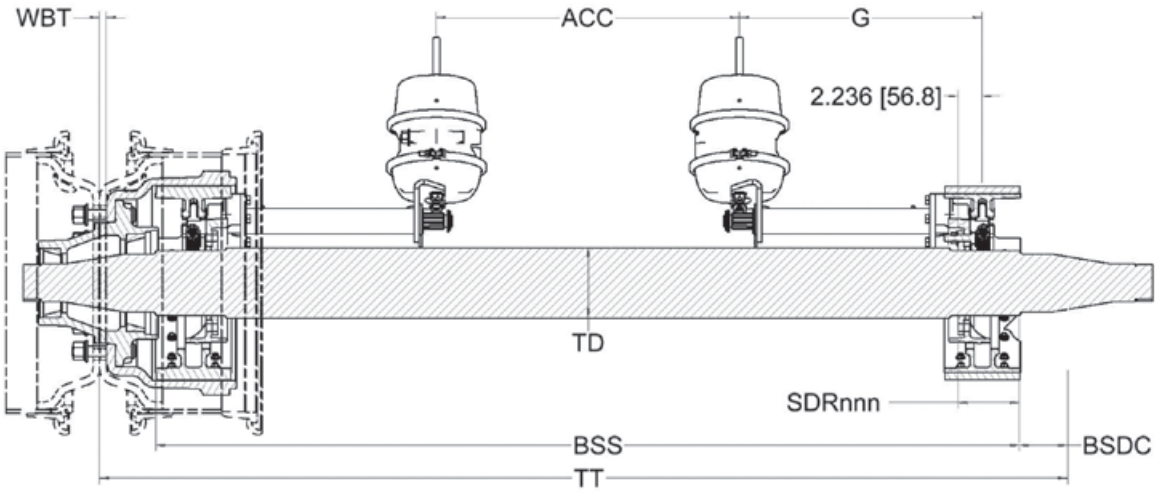
⚠**CAUTION: Only use operators certified by AWS (the American Welding Society) or other internationally recognized welding society.**

⚠**CAUTION: Do not bring axles in from nonheated storage and weld while cold.**

⚠**CAUTION: To provide optimum suspension-to-tube welds, preheating is recommended. Preheating will minimize loss of the ductile properties in the weld area by slowing the rate of cooling, thus reducing the formation of an untempered martensitic grain structure adjacent to the weld. Martensite, a brittle grain structure, is formed by the rapid cooling of the metal surrounding the weld area. Preheat the suspension seat weld area to a minimum of 600 degrees Fahrenheit with a rosebud prior to welding. Preheat temperature should be verified with a temperature sensitive crayon or other appropriate means. If using multiple-pass welding, it is recommended to maintain a minimum preheat temperature of 600 degrees Fahrenheit between passes. After welding, hold at 500-600 degrees Fahrenheit for one hour.**

⚠**CAUTION: Do not "test the arc" on the axle beam.**

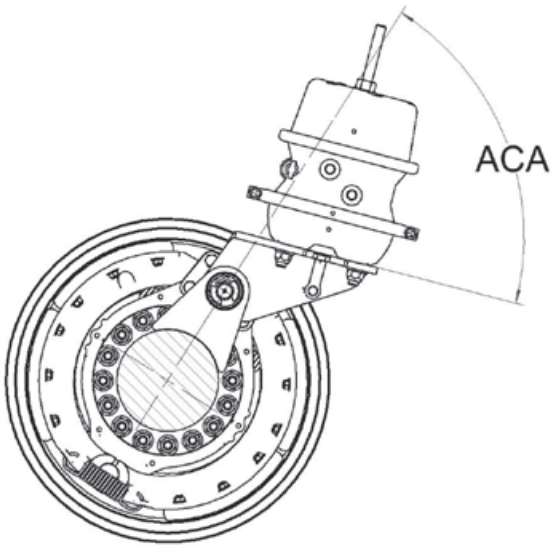
Method for welding carbon and low alloy steels	AWS electrode classification	AWS spec
Shielded metal arc (stick electrodes)	E70XX	A5.1 A5.5
Gas metal arc (MIG, solid wire feed)	ER70S-X	A5.18
Gas Tungsten arc (TIG) has a non-consumable electrode, use stick electrodes	ER70-X	A5.18
Flux cored arc (self-shielded wire)	E70T-X	A5.20



ABBREVIATIONS

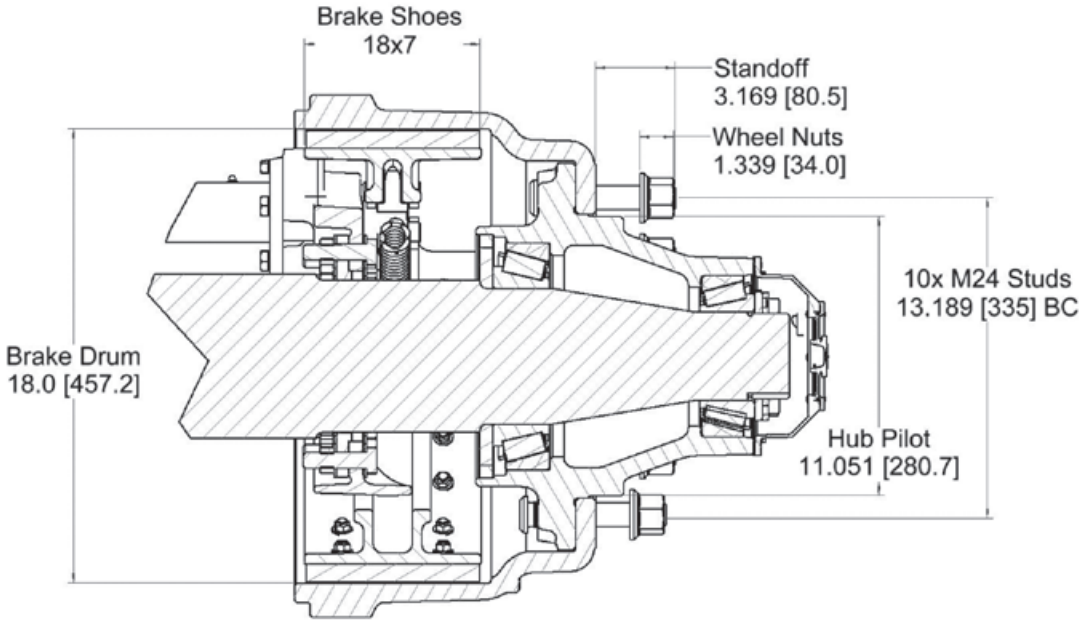
ACA = Air Chamber Bracket Angle
ACC = Air Chamber Centers
BSDC = Bearing Shoulder to dual steel wheel center
BC = Bolt Circle
BSS = Bearing Shoulder to Bearing Shoulder
D = Bearing Shoulder to Inboard Edge of Drum
G = Center of Brake Shoes to center of Air Chamber (See chart of lengths available)
SDRnnn = Spider offset from Bearing Shoulder where nnn is n.nn
SO = Standoff
TD = Axle Diameter
TT = Tire Track length using dual steel wheels method (7/16" back plate thickness), rounded to nearest ½ inch
WBT = Wheel Backplate Thickness

G lengths options available
8.63 Min
9.31
11.56
12.50
13.47
15.53
16.73
17.50
18.63
19.56
21.06
22.38 Max



SPECIFICATIONS

	Capacity	Axle Cross Section	Bearing Location	Industry Part No. Cup/Cone	Bearing Width	BSDC	Hub Seal Flange	Lubrication	Wheel Stud Bolt Circle Standoff	Brake Size
A45	45,000	5.75" Solid	Inboard	772/787	1.875	5 7/16	Built-in	Oil or Grease	10×M24 13.189" BC 3.17" SO	18 × 7
			Outboard	6580/6535	2.125					
A65	65,000	6.00" Solid	Inboard	892/896	2.250	5 3/16	1/2"	Grease Only		
			Outboard	6580/6535	2.125					
	70,000	6.50" Solid	Inboard	892/896	2.250					
			Outboard	6580/6535	2.125					



MAINTENANCE SCHEDULE

Service Items	HAUX PIN		Torque	Frequency
	A45	A65		
Brake Kit - (2/axle)	009703-45B			Check every 10,000 miles or 2 months. Check condition of shoes, linings, springs, and anchor pins. Replace all components with brake kit. Check bolt-on brakes fasteners (32/axle) are torqued.
Brake Shoe and linings				
Retention Spring				
Return Spring				
Anchor Pin				
Bolt-on fasteners set	009536		160-170 ft-lbs	
Air Chamber (2/axle) (def)	009500-363612N		130-150 ft-lbs	Inspect operation every 2,500 miles; repair or replace as needed.
Slack Adjuster & clevis - manual (2/axle)	009707, 009708			Check slacks every 2,500 miles. Inspect operation; repair or replace as needed. Readjust slacks as needed (manual only).
Slack Adjuster & clevis - auto (2/axle)	A-14768, 004447			
Axle Components Kit (2/axle) {all items pertaining to wheel ends}	009439	009542		Check every six months.
Lubrication	local			Add lubrication as needed (80/90 oil for A45, #2 grease for A65). If any signs of water, completely clean out lube and refill or repack. If any signs of metal shavings: - completely clean out lube - replace bearings and refill or repack
Hub seals	009399	009444		Inspect for excessive wear; replace as needed. (Minute seepage of grease is acceptable on A65 hub seal only.)
Hub seal flange	not required	009445		
Inner bearing	009395	009361		Check each time hub is remove or 100,000 miles.
Outer bearing	009396			
Spindle Nut Kit (star washer, inner and outer nuts)	009365, 009366, 009367		Per MGM-100 for double nut	Check end-play, reset according to MGM-100 if end-play is ok, check torque on outer nut 250-300 ft-lbs.
Hubcap	009513	009363	9-11 ft-lbs	Change gasket at any sign of lube seepage. Change hubcap if any signs of cracks or heavy damage.
Hubcap gasket	009447			
Hub & Drum	009518-4U	009442-3U		Check every 10,000 miles or 2 months.
Hub	009518-4H	009442-3H		Check for cracks; replace as needed.
Drum	009442-3D			Check for cracks, uneven brake wear, and/or thin walls; rebore permitted up 18.08" diameter, replace at 18.12″ maximum.
Studs	009442-3S			Check for any cracks or threads stripped; replace.
Lugs	009442-3N		500-600 ft-lbs	Check torque first 50 miles; and then every 10,000 thereafter. Check any damage; replace as needed.

Customer's spec sheet overrides any part numbers provided on this sheet.

www.hendrickson-intl.com

HENDRICKSON®

Specialty Products – Auxiliary Axle Systems
277 North High Street
Hebron, OH 43025 USA
740.929.5600
Fax 740.929.5601

Hendrickson Canada
250 Chrysler Drive, Unit #3
Brampton, ON L6S 6B6 Canada
905.789.1030
Fax 905.789.1033

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