

# **PARTS LIST** INTRAAX® AAL ZMD™ – AUSTRALIA

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## TABLE OF CONTENTS

<b>INTRODUCTION</b> .....	3
ABBREVIATIONS.....	3
<b>AXLE AND SUSPENSION IDENTIFICATION</b> .....	4
AXLE ID PLATE.....	4
MANUFACTURING PLANT IDENTIFIER.....	4
DATE OF MANUFACTURE.....	4
MANUFACTURING SEQUENCE NUMBER.....	4
SUSPENSION ASSEMBLY NUMBER PLATE.....	5
ASSEMBLY NUMBER.....	5
RIDE HEIGHT LABEL.....	5
<b>AXLE ASSEMBLY</b> .....	6
HALFTRAAX™ ASSEMBLY COMPONENTS.....	6
HALFTRAAX SPINDLE IDENTIFICATION.....	6
AXLE ASSEMBLY.....	6
FRAME HANGER IDENTIFICATION.....	7
<b>FRAME HANGER &amp; PIVOT</b> .....	8
FRAME HANGER & PIVOT.....	9
<b>AIR SPRINGS</b> .....	10
AIR SPRING IDENTIFICATION.....	10
AIR SPRINGS, FITTINGS & FASTENERS.....	11
<b>HEIGHT CONTROL VALVE</b> .....	12
HCV SYSTEM IDENTIFICATION.....	12
HEIGHT CONTROL VALVE.....	13
<b>ZMD™ AXLE DOWN STOP</b> .....	14
<b>ZMD™ RETROFIT &amp; REWORK KITS</b> .....	15
ZMD TO SHOCKED KITS.....	15
SHOCKED TO ZMD KITS.....	15
<b>SPECIAL TOOLS</b> .....	17
<b>REVISIONS TABLE</b> .....	18

### Document Interactivity

The interactive *Table of Contents* allows users to quickly navigate to the appropriate page with a single mouse click. The *INDEX* button at the bottom of each page returns you to the *Table of Contents*. Other links within the document are identified by black underlined text, whereas links to external websites are identified by blue underlined text.



## INTRODUCTION

The purpose of this parts list is to document the available repair parts, accessories, special tools and lubricants available for the Hendrickson AAL250 ZMD™ INTRAAX® (Integrated Axle Assembly) suspension system for Australia.

ZMD technology eliminates shock absorbers from the maintenance equation by integrating the damping function traditionally performed by the shock within the air spring itself. ZMD air springs exchange pressurised air between the bellows and the piston. This patented air spring provides uniform and consistent damping over the life of the air spring.

The major components included in this parts list is as follows:

- AAL INTRAAX axle assemblies (HALFTRAAX™)
- Air-springs, relevant mounting hardware and fasteners
- ZMD down stop chains, relevant mounting hardware and fasteners
- Frame hangers
- QUIK-ALIGN® hardware and fasteners
- Retrofit kits, between ZMD and Shocked

Parts published in this parts bulletin are the latest available parts. Unless otherwise noted, they are functionally equivalent to, or better than, the originally supplied components.

This parts list should be used in conjunction with:

- [97114-100 Trailer Wheel End Systems Parts List](#)
- [97114-097 Trailer Brake Systems Parts List](#)

**NOTE:** All quantities listed within this parts list are as applicable for a single axle.

## ABBREVIATIONS

Abbreviations used in this document may include the following terms:

- AR – As Required
- ARL – Axle Rebound Limiter
- LJ – Limited Jounce
- NSS – Not Serviced Separately
- TFB™ – TRI-FUNCTIONAL™ Bush
- ZMD™ – Zero Maintenance Damping™



## AXLE AND SUSPENSION IDENTIFICATION

To assist with the identification of an INTRAAAX® axle or suspension system, reference should be made to the axle identification plate (refer to [Figure 1](#)) and suspension assembly number plate (refer to [Figure 2](#)).

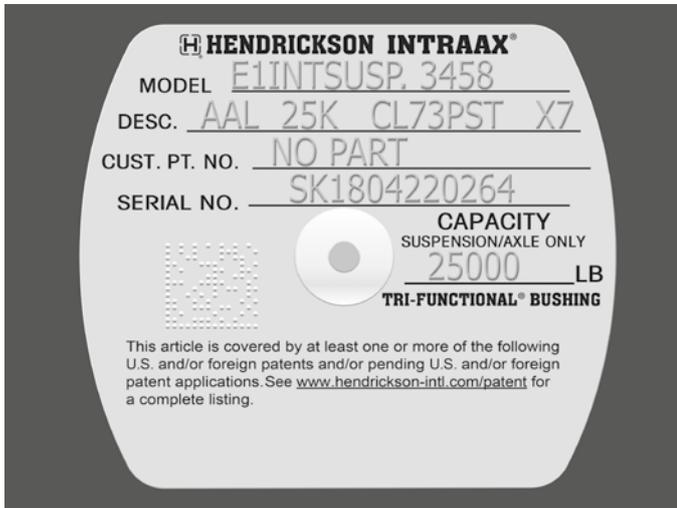


Figure 1: Axle ID Plate

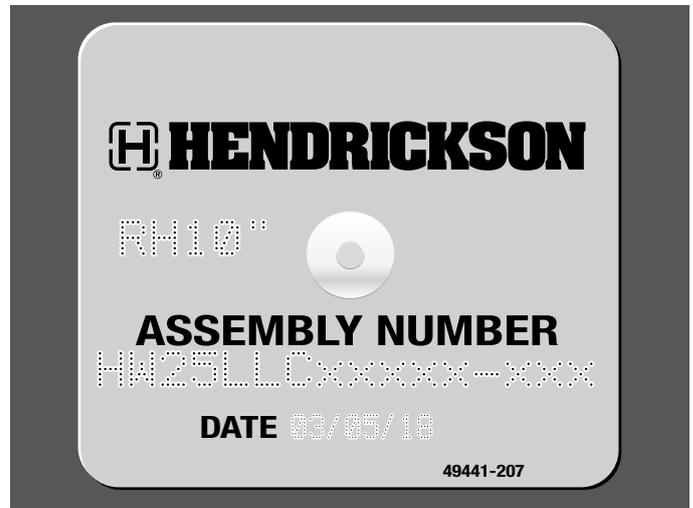


Figure 2: Assembly Plate

### AXLE ID PLATE

The axle ID plate is usually located on the inboard side of the left-hand trailing arm and provides the following:

- MODEL
- DESCRIPTION
- CUSTOMER PART NUMBER
- AXLE SERIAL NUMBER
- AXLE CAPACITY

The axle serial number (e.g. SK1804220264) provides the following details:

### MANUFACTURING PLANT IDENTIFIER

The first two digits of the axle serial number identify the manufacturing plant that originally manufactured the HALFTRAAX™ Assembly as follows:

- SK – Somerset Kentucky
- LI – Lebanon Indiana
- CO – Canton Ohio

### DATE OF MANUFACTURE

The third to eighth digits of the axle serial number identify the date the HALFTRAAX™ Assembly was manufactured in date format: Year - Month - Date. For example, the code 180422 shows that it was manufactured on 22 April 2018.

### MANUFACTURING SEQUENCE NUMBER

The final four digits (e.g. 0264) of the axle serial number provide the manufacturing sequence number.

### SUSPENSION ASSEMBLY NUMBER PLATE

The suspension assembly number plate is usually located on the inboard side of the right-hand trailing arm. It indicates that the suspension has been assembled in Australia and provides the following:

- RIDE HEIGHT
- ASSEMBLY PART NUMBER
- DATE OF ASSEMBLY

### ASSEMBLY NUMBER

The first six digits of the assembly part number identify the suspension system base model, while the remaining digits identify specific options such as wheel end and brake system configuration.

#### Base Model Identification

Manufacturer (Digit 1)	TRI-FUNCTIONAL™ Bush Width (Digit 2)	Load Capacity (Digit 3 & 4)	Model (Digit 5)	Specific Option Code (Digit 6)	Tyre Pressure Control (Digit 7)
H= Hendrickson	W = Wide 6 Inch (152.4 mm)	25 = 25,000 lbs (11,334 kg)	L = Low Ride	See below.	C = None P = TIREMAAX™ PRO

#### Specific Option Code (Digit 6)

SOC	Axle Track	Brake Type	Spindle type	Axle Diameter
L	73 Inch	16.5 Inch Drum	HP – Parallel	5.75 Inch (LDA)

### RIDE HEIGHT LABEL

The ride height label (refer to [Figure 3](#)) is usually affixed to the trailer frame, and provides an additional means of identification for an INTRAAX® axle or suspension system, as well as confirming system ride height for service purposes.

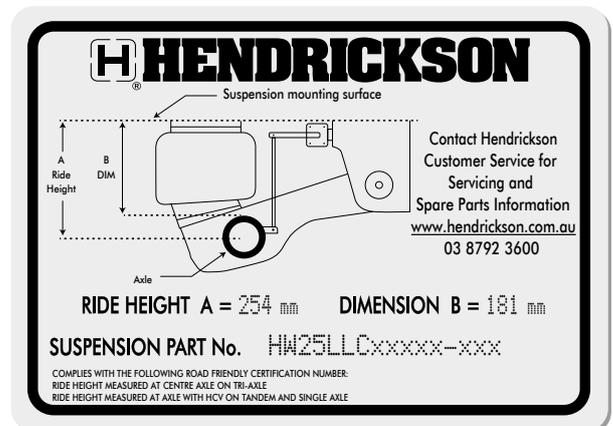


Figure 3: Ride Height Label



## AXLE ASSEMBLY

### HALFTRAAX™ ASSEMBLY COMPONENTS

All replacement AAL Drum Brake HALFTRAAX™ axle assemblies are supplied complete with the following components:

- TRI-FUNCTIONAL™ Bushes
- S-Cams and tubes
- Brake anchor pins and bushes

Refer to [Figure 4](#) for detailed view of the AAL drum brake HALFTRAAX assembly as supplied.

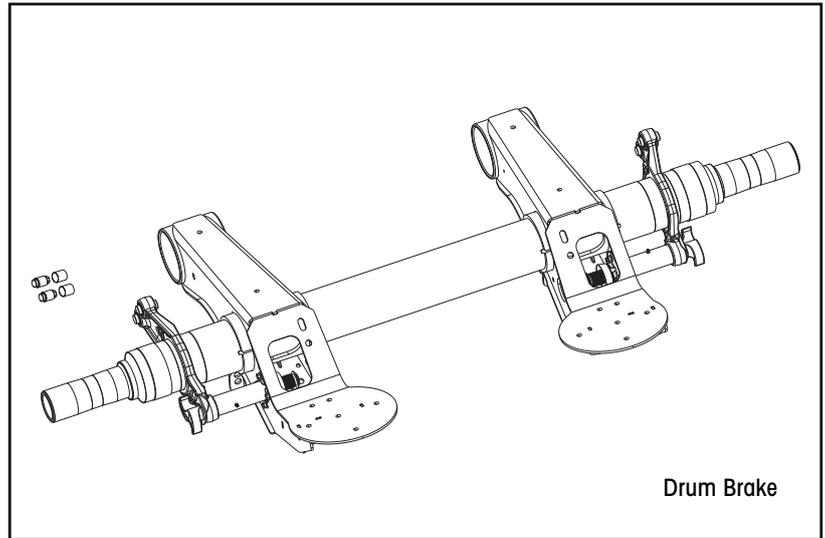


Figure 4: Drum Brake HALFTRAAX Assembly

### HALFTRAAX SPINDLE IDENTIFICATION

AAL INTRAAX® ZMD™ suspension systems for Australia are only available with HP (Parallel) type spindles. Refer to [Figure 5](#).

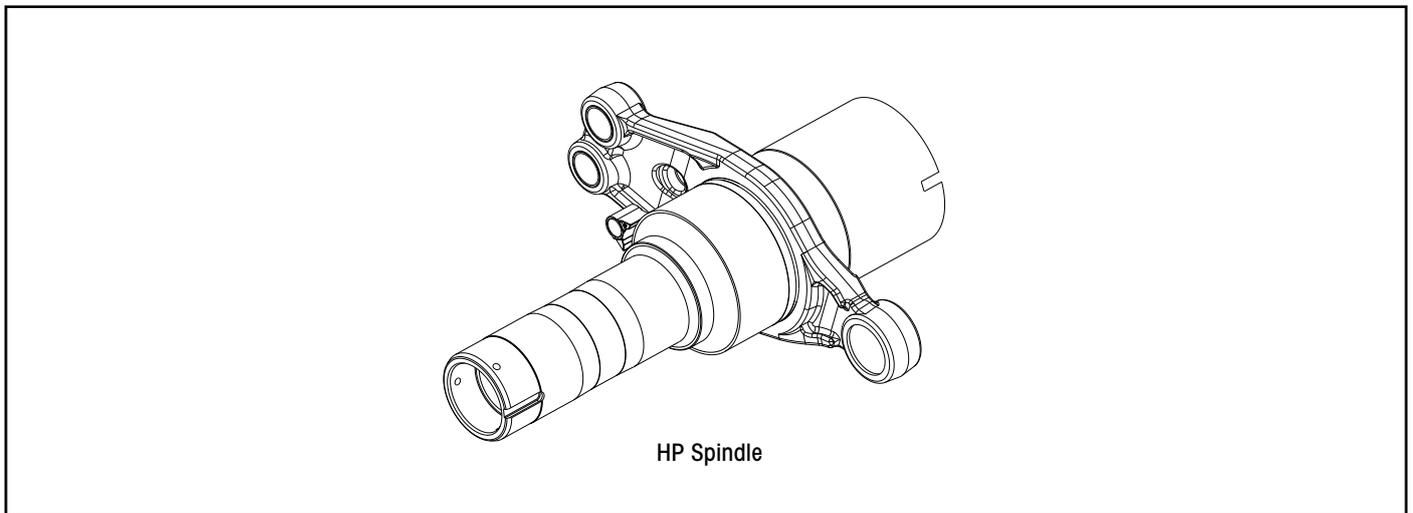


Figure 5: HP Parallel Spindle

## AXLE ASSEMBLY

Part Number	Description	Notes
EIINTSUSP.3458	HALFTRAAX AAL250 73" Track 16.5" Drum HP	LDA Axle

**NOTE:** This axle is available in a number of ride heights. The ride height is determined by the down stop chain, air spring spacer, hanger bracket and configuration.

## FRAME HANGER IDENTIFICATION

To determine the applicable frame hanger for a specific suspension, the hanger 'drop' will often need to be determined.

Frame drop is the measurement in millimetres from the underside of the trailer frame to the centre of the pivot bolt hole. Refer to dimension 'A' in [Figure 6](#).

Frame hangers vary according to ride height and suspension. Refer to [Figure 7](#) for a pictorial comparison of frame hanger designs.

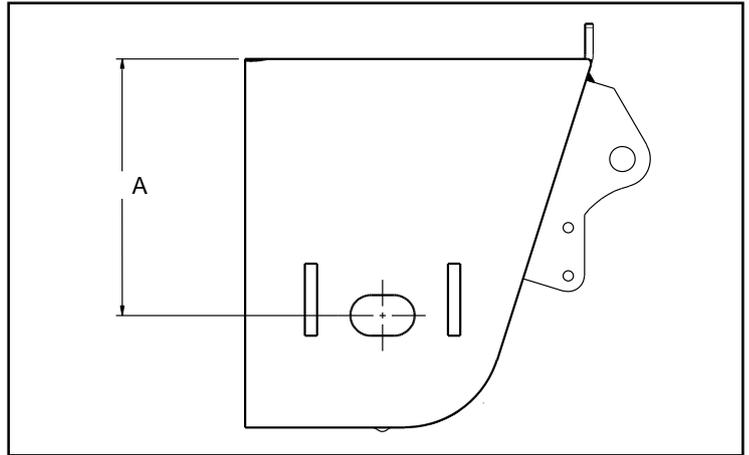


Figure 6: Frame Hanger Drop Identification

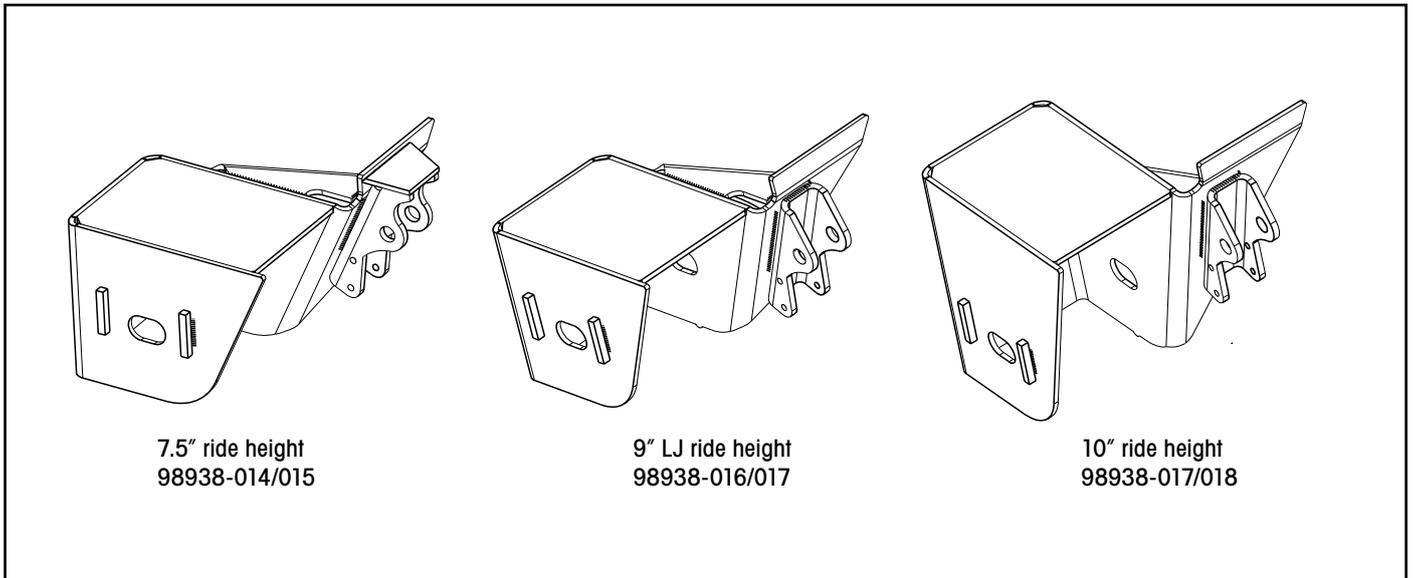
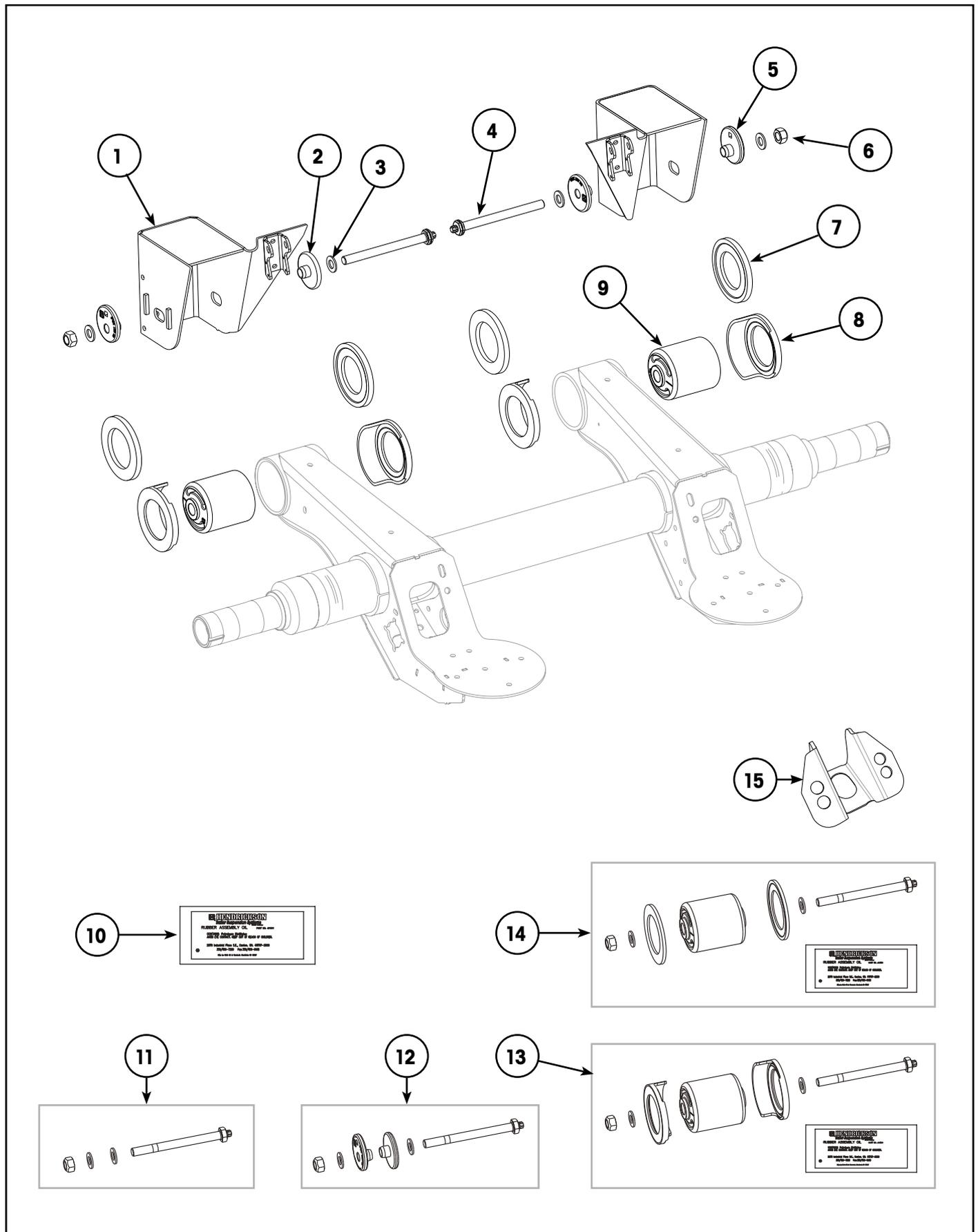


Figure 7: Frame Hanger Identification



**FRAME HANGER & PIVOT**





**FRAME HANGER & PIVOT**

Item	Part Number	Description	Qty	Notes
1	98938-014	Frame Hanger, Left – AAL Standard	1	7.5" ride height. 114 mm drop. [1] Refer "Frame Hanger Identification" on page 7.
	98938-015	Frame Hanger, Right – AAL Standard	1	
	98938-016	Frame Hanger, Left – AAL Standard	1	9" limited jounce ride height. 114 mm drop. [1] Refer "Frame Hanger Identification" on page 7.
	98938-017	Frame Hanger, Right – AAL Standard	1	
	98938-018	Frame Hanger, Left – AAL Standard	1	10" ride height. 203 mm drop. [1] Refer "Frame Hanger Identification" on page 7.
	98938-019	Frame Hanger, Right – AAL Standard	1	
2	C-20924	Flanged Washer, Inner – QUIK-ALIGN®	2	Concentric. Use Item 12.
3	NSS	Shear Bolt – QUIK-ALIGN	2	Use Item 11, 12, 13 or 14.
4	NSS	Hardened Washer – 7/8"	4	Use Item 11, 12, 13 or 14.
5	C-20925	Flanged Washer, Outer – QUIK-ALIGN	2	Eccentric. Use Item 12.
6	NSS	Nut, Prevailing Torque – 7/8 UNC	2	Use Item 11, 12, 13 or 14.
7	S-21099-4P	Kit, Wear Bushing – Flat	1	Included in item 14.
8	S-26824-4P	Kit, Wear Bushing – Glove Style	1	Not recommended for off-road. Included in item 13.
9	NSS	Bush, TRI-FUNCTIONAL™	2	[2] Use Item 13 or 14.
10	A-14011	Lube Pack, TRI-FUNCTIONAL Bush	2	Included in items 13 and 14.
11	S-31623	Kit, Pivot Bolt	2	Includes Items 3, 4 & 6.
12	S-31625	Kit, QUIK-ALIGN	2	Includes Item 2, 3, 4, 5 & 6.
13	98591-010	Kit, Pivot Bush – Glove Washer	2	[2] Includes Items 3, 4, 6, 8, 9 & 10.
14	A-31624	Kit, Pivot Bush – Flat Washer	2	[2] Includes Items 3, 4, 6, 7, 9 & 10.
15	S-24697	Brake Chamber Mount	2	Suits 5-3/4" LDA axles.

**[1] Hanger Repair Kits:** Two hanger repair kits are available to assist with repair of cracked, worn or gouged hangers. Depending on the damage involved it may be possible to use one of these kits instead of replacing the entire hanger. For more details refer to Hendrickson [Technical Bulletin 97117-101](#).

- 98690-003 is for worn or gouged hangers. Includes pivot bolt kit, S-31628.
- 98544-024 is for hangers with minor cracking.

**[2] NOTE:** The TRI-FUNCTIONAL™ bush (TFB™) is larger than the inner diameter of axle beam tube. To avoid damaging the TFB, the correct installation tool **MUST** be used along with the appropriate lubricants. Refer to the "Special Tools" on page 17 section for tool details. For bush replacement procedures, refer to Hendrickson [Technical Bulletin L427](#).

## AIR SPRINGS

The ZERO MAINTENANCE DAMPING™ (ZMD™) system consists of internally damped air springs, which are designed to replace the function of standard shock absorbers, and down stop chains. This helps to lower trailer maintenance, improve ride quality and enhance cargo protection.

The main components of a ZMD air spring are similar a standard air spring, with rubber bellows and a steel or plastic piston. However, the internal design components of this patented air spring are specifically designed to perform the suspension damping function traditionally performed by the shock absorber. The ZMD air spring exchanges pressurised air between the bellows and piston through a patented mechanism to provide continuous suspension damping.

**IMPORTANT:** These specialised air springs cannot be exchanged with standard air springs.

**NOTICE:** Ensure that mounting hardware, air springs, spacers and down stop chains are correct for the designed suspension ride height. Any mismatched parts may result in damage to the suspension and suspension components.

## AIR SPRING IDENTIFICATION

To determine the correct part number for the air spring as fitted to a particular suspension, a visual inspection of the existing air spring is recommended. The air spring part number is provided on a decal on the upper bead-plate (refer to *Item 1* in [Figure 8](#)) and is also moulded into the air spring rubber bellows (refer to *Item 2* in [Figure 8](#)).

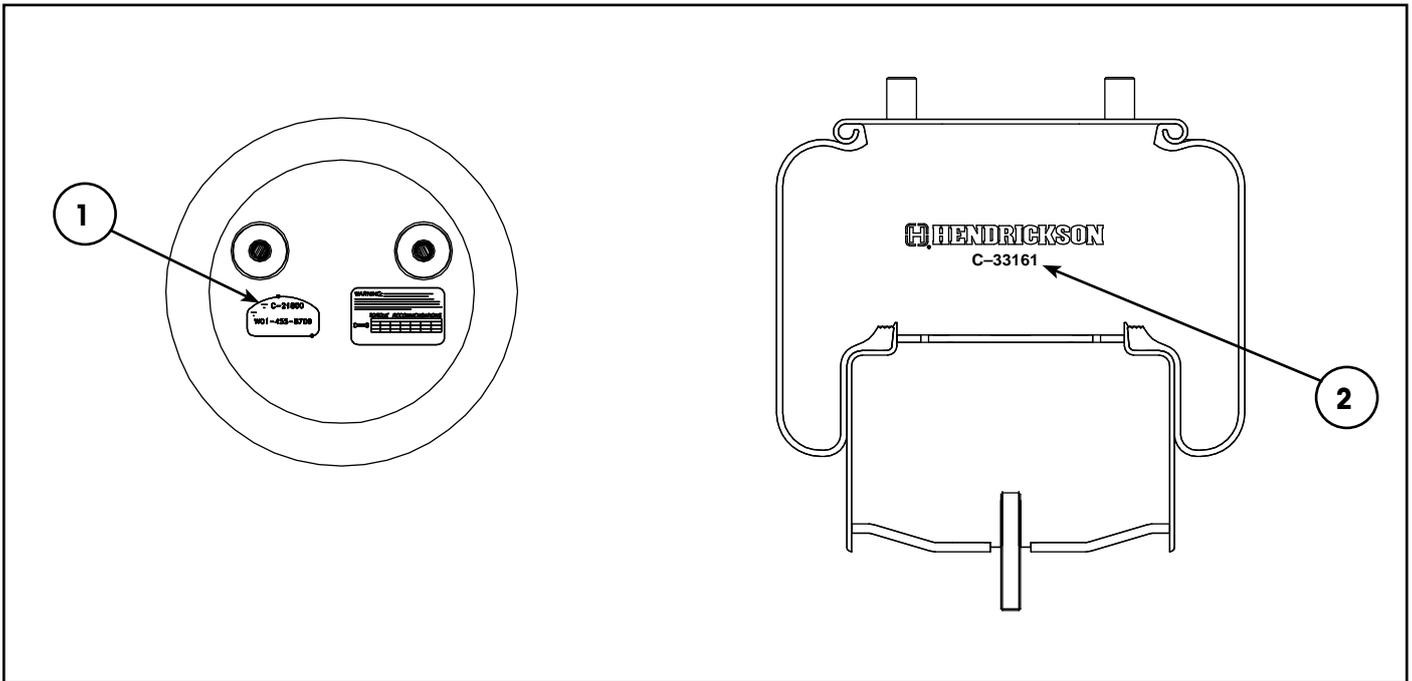
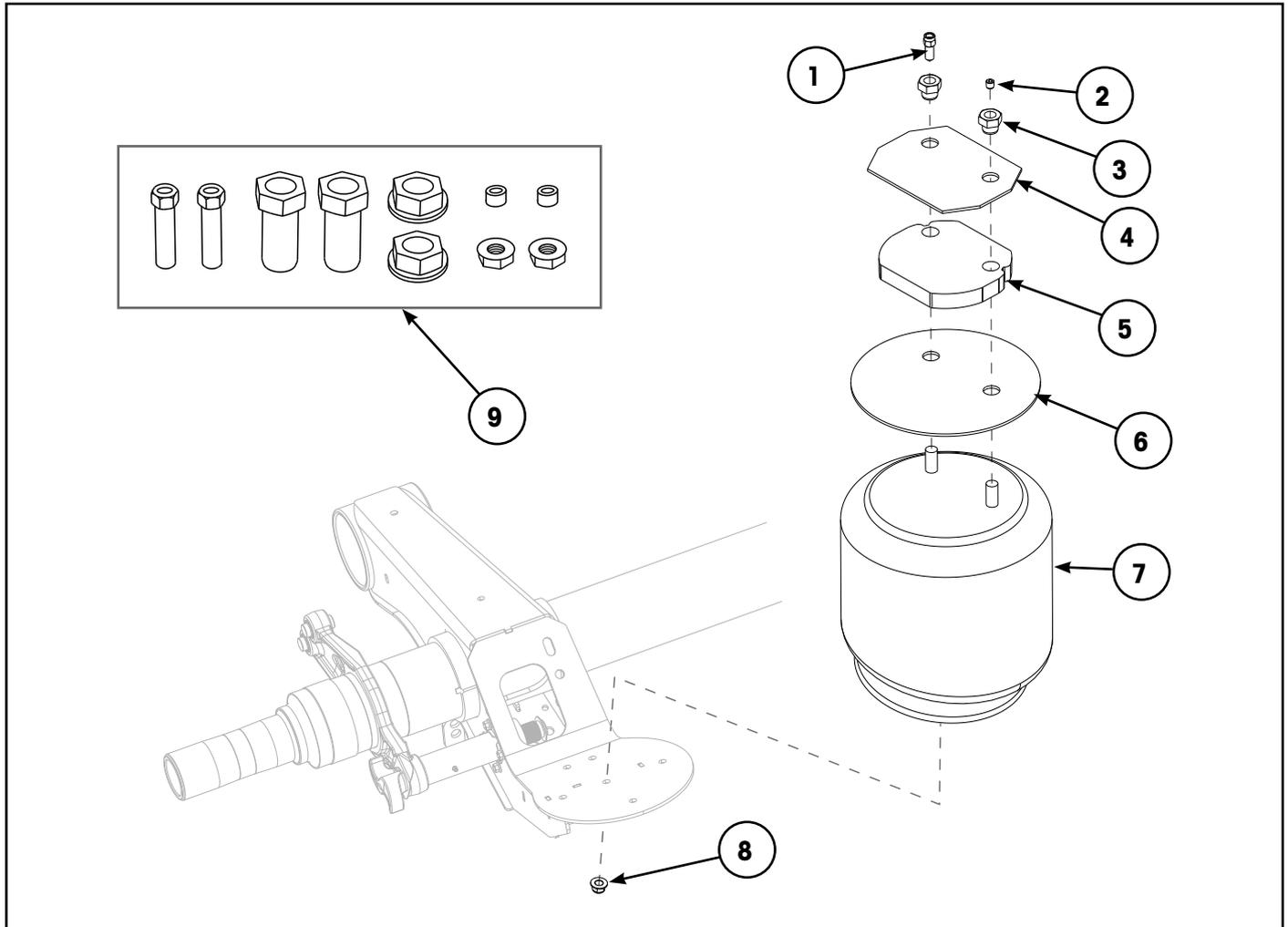


Figure 8: Air Spring Identification



**AIR SPRINGS, FITTINGS & FASTENERS**



Item	Part Number	Description	Qty	Notes
1	NSS	Air Fitting, 3/8" – Air Spring	2	Use item 9.
2	NSS	Plug, Air Fitting – 1/4" NPT	2	Use item 9.
3	NSS	Air Fitting – Air Spring	4	Use item 9.
4	B-20905	Plate – Air Spring Mount, Upper	2	
5	S-22510-4	Spacer, Air Spring – 19 mm	2	7.5" ride height.
	S-22510-2	Spacer, Air Spring – 48 mm	2	10" ride height.
	S-22510-3	Spacer, Air Spring – 80 mm	2	9" limited jounce.
6	S-23294	Air Spring Plate	2	.
7	C-33161	Air Spring 20K ZMD™	2	
8	NSS	Nut, Flanged – Air Spring, Lower	2	1/2"-13. Included in item 9.
9	S-22630	Hardware Kit – Air Spring	1	7.5" ride height.
	S-22632	Hardware Kit – Air Spring	1	9" ride height with limited jounce.
	S-22631	Hardware Kit – Air Spring	1	10" ride height.

## HEIGHT CONTROL VALVE

### HCV SYSTEM IDENTIFICATION

For AAL INTRAAX suspension systems, the Height Control Valve (HCV) components are common regardless of configuration, with the following exceptions.

The lower linkage mounting bracket is available in two variations: (Refer to [Figure 9](#).)

- Fixed to the axle tube
- Fixed to the trailing arm

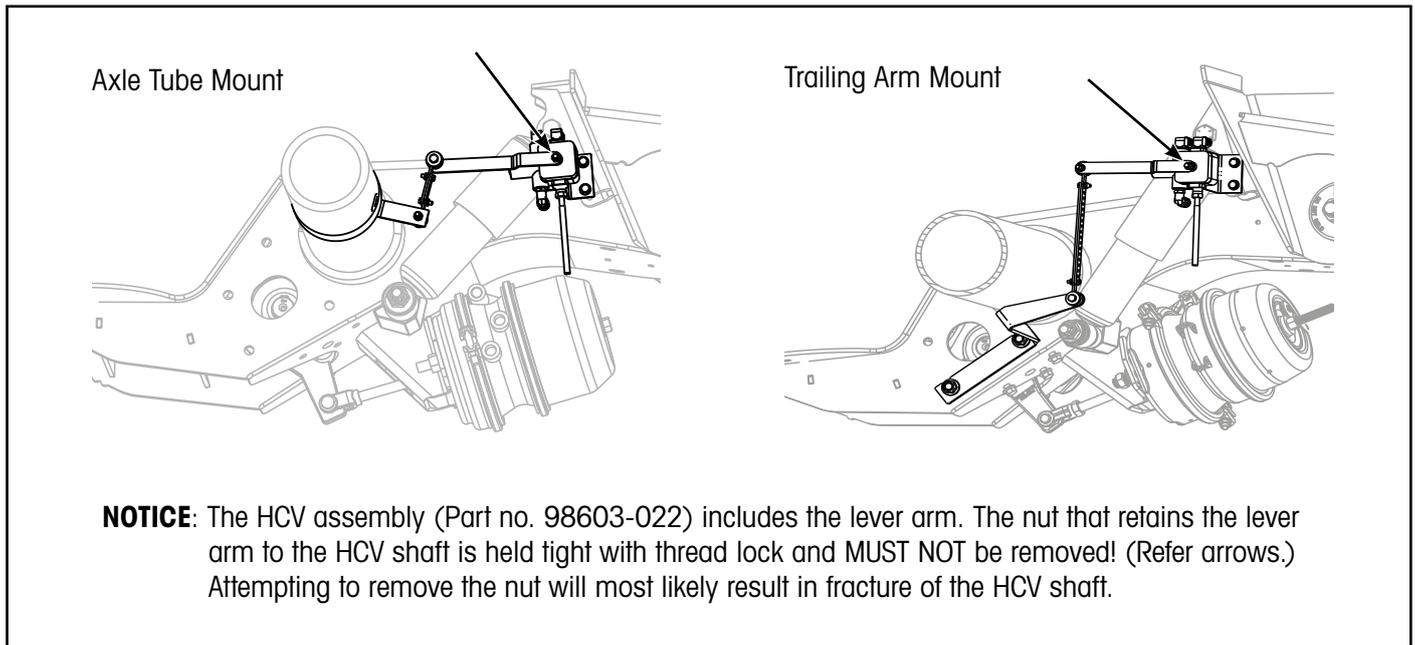
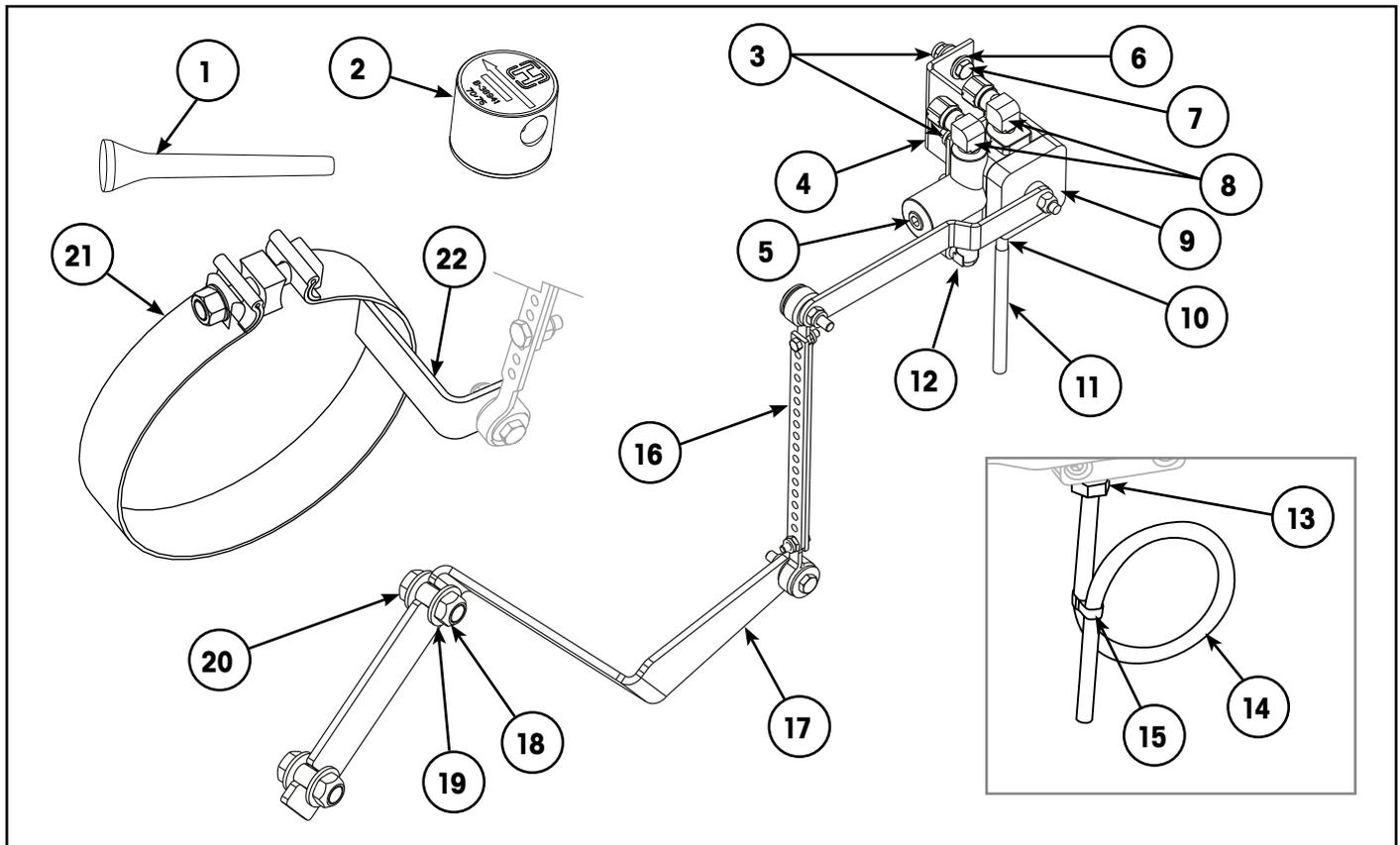


Figure 9: Height Control Valve Mounting

### COMPLETE HCV KITS

Complete Height Control Valve kits include HCV, protection valve, linkages, brackets, clamps and necessary hardware.

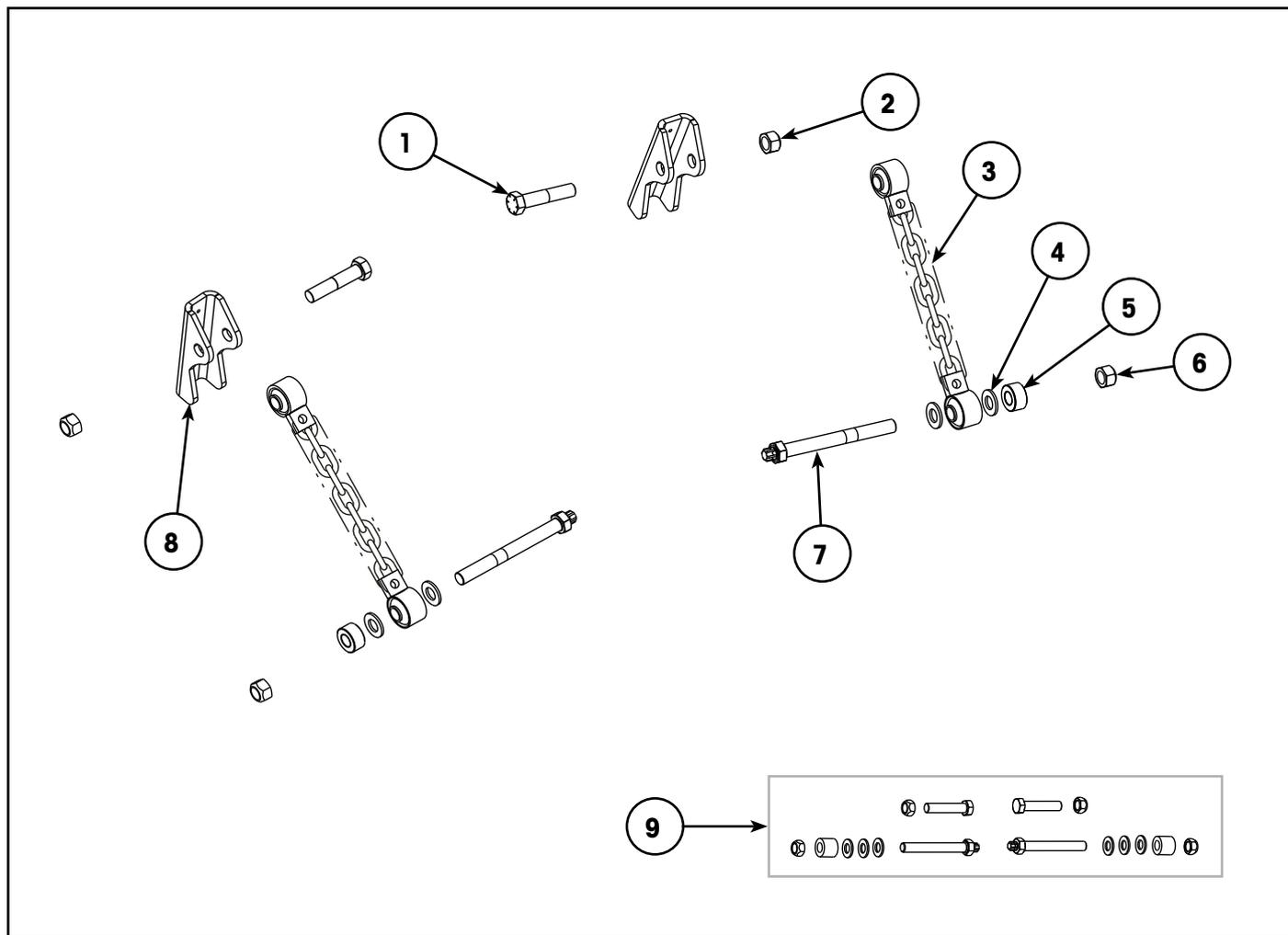
Number	Suitable For	Components
98606-091	Bolt-On Bracket Mount - Standard Hanger	Includes items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 16, 17, 18, 19 & 20.
98606-122	5-3/4" Axle Tube Mounted Linkage - Std Hanger	Includes items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 16, 21 & 22.

**HEIGHT CONTROL VALVE**


Item	Part Number	Description	Qty	Notes
1	NSS	HCV Centring Dowel	1	Use item 23.
2	S-38941	Pressure Protection Valve	1	
3	NSS	Nut Lock Hex 1/4" - 20 UNC	4	Use item 23.
4	57975-000	Bracket, HCV Mounting	1	Standard hanger.
5	NSS	Pipe Plug 1/4" NPT	1	Use item 23.
6	22962-028	Washer, Hardened – 1/4"	6	
7	NSS	Bolt, 1/4"-20 UNC x 3/4"	2	Use item 23.
8	98732-003	Elbow 90° x 1/4" NPT Compression	2	Compression. Two are included in item 23.
9	98603-022	Height Control Valve 1/4" NPT	1	
10	NSS	Barbed Tube Fitting, 1/4" NPT, Plastic	1	Use item 23. For heavy duty applications use items 13, 14 & 15.
11	NSS	Tube 1/4" ID x 4" Long	1	
12	98934-031	Elbow 90° Swivel x 1/4" NPT	1	Push to connect, swivel.
13	98934-035	Fitting 1/4 NPT, Metal	1	Optional vent tube & fitting suitable for heavy duty axle use.
14	SA-6400-2	Tube, Black Nylon – 1/4" x 12" Long	1	
15	S-11430-1	Tie, Nylon	1	
16	S-14187	Link Assembly – Bolted	1	
17	98587-010	Bracket, Lower – HCV Link	1	Trailing arm mounted.
18	49846-000	Lock Nut, HCV Bracket - 1/2" UNC	2	
19	22962-011	Washer, HCV Bracket – 1/2" Inch	4	
20	98520-002	Bolt, HCV Bracket 1/2" UNC x 1.25"	2	
21	S-26593-2	Clamp, Bracket - HCV Link	1	5.75" axle tube mounted.
22	S-23293	Bracket, Lower – HCV Link	1	Axle tube mounted. Use with clamp, item 21.
23	S-29870	HCV Sub Kit (See also "Complete HCV Kits")	1	Includes items 1, 3, 5, 7, 8, 10 & 11. (Not illustrated)



## ZMD™ AXLE DOWN STOP



Item	Part Number	Description	Qty	Notes
1	NSS	Bolt 3/4"-10 x 3.5" Grade 8	2	Use item 9.
2	NSS	Nut, Flanged 3/4"-10 UNC	2	Use item 9.
3	98918-037	Down Stop Chain	2	7.5" ride height.
	98918-038	Down Stop Chain	2	9" limited jounce ride height.
	98918-039	Down Stop Chain	2	10" ride height.
4	NSS	Washer, Hardened	4	Use item 9.
5	NSS	Spacer, Lower Down Stop Mount	2	Use item 9.
6	NSS	Nut Lock 3/4"-10 UNC	2	Use item 9.
7	NSS	Flanged Bolt – 1/2"-13 x 1-1/2" Grade 8	2	Use item 9.
8	98870-010	Clevis, Upper Down Stop	2	Suits limited jounce 9" & 10" ride height hangers 98938-016/017 & 98938-018/019.
	98544-245	Clevis Kit, Upper Down Stop	2	Suits 7.5" ride height hangers 98938-014/015. Kit includes clevis, support plate & instructions.
9	98111-112	Kit, Down Stop Chain Mounting	1	Includes bolts, nuts, spacers & washers.



## ZMD™ RETROFIT & REWORK KITS

Kits are available to convert original ZMD™ suspensions to regular shock absorber equipped suspensions and to retrofit standard suspensions to ZMD. The kits are supplied with retrofit instruction guides. For more details, refer to the information available in the [ZMD section](#) of the [hendrickson.com.au](http://hendrickson.com.au) website.

## ZMD TO SHOCKED KITS

The ZMD to shocked kits include road-friendly shock absorbers and air springs, along with any necessary associated brackets and hardware.

Kit Number	Capacity	Application	From ZMD Ride Height	To Shocked Ride Height
98881-090	25k lbs	AAL250 Drum Brake Only	7.5"	7.5"
98881-091	25k lbs	AAL250 Drum Brake Only	9" limited jounce	9" limited jounce
98881-092	25k lbs	AAL250 Drum Brake Only	10"	10"

## SHOCKED TO ZMD KITS

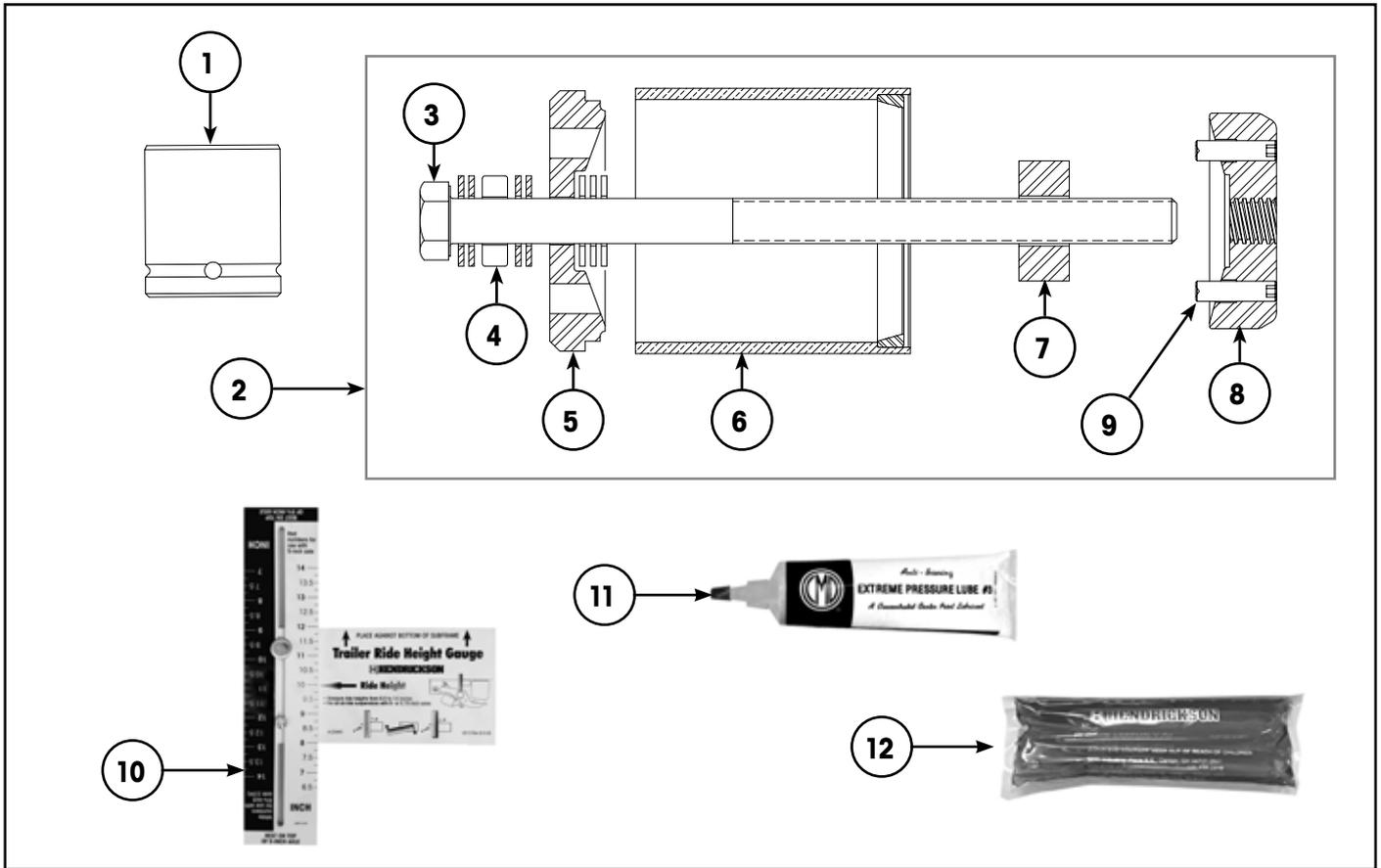
These kits include down stop chains and air springs, along with necessary associated brackets and hardware.

Kit Number	Capacity	Application	From Shocked Ride Height	To ZMD Ride Height
98881-093	25k lbs	AAL250 Drum Brake Only	7.5"	7.5"
98881-094	25k lbs	AAL250 Drum Brake Only	9" limited jounce	9" limited jounce
98881-095	25k lbs	AAL250 Drum Brake Only	10"	10"



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**SPECIAL TOOLS**



Item	Part Number	Description	Qty	Notes
1	S-24303	Socket, Pivot Bolt – E20	1	3/4 inch drive
	S-24536	Socket, Pivot Bolt – E20	1	1 inch drive standard duty
	S-25119	Socket, Pivot Bolt – E20	1	1 inch drive heavy duty
2	S-21307A	Tool Kit - Wide TRI-FUNCTIONAL™ Bush	1	Refer Note.
3	S-21308	Bolt, Acme Thread – 18 Inch	1	Included in item 2.
4	98762-001	Bearing, Thrust – TFB™ Tool	1	Included in item 2.
5	S-21312	Plate, Front – TFB Tool	1	Included in item 2.
6	S-21313	Tube, Transition – TFB Tool	1	Included in item 2.
7	S-21314	Spacer, Removal – TFB Tool	1	Included in item 2.
8	S-21309	Plate, Rear Drive – TFB Tool	1	Included in item 2.
9	SA-2800-4	Set Screw – 1/2"-13 x 4 inch	2	Removal only. Included in item 2.
	SA-2800-7	Set Screw – 1/2"-13 x 2 inch	2	Installation only. Included in item 2.
10	S-23445	Gauge, Ride Height – 6.5 to 14 Inch	1	
11	S-21337	Grease, Extreme Pressure	1	Refer Note. Essential for use with tool on installation. Included in item 2.
12	A-14011	Lube Pack - TRI-FUNCTIONAL Bush	1	To lubricate bushes on installation.

**NOTE:** The TRI-FUNCTIONAL™ tool kits are supplied with one tube of extreme pressure grease. It is essential to use this grease on the tool's Acme thread to avoid thread form damage.

