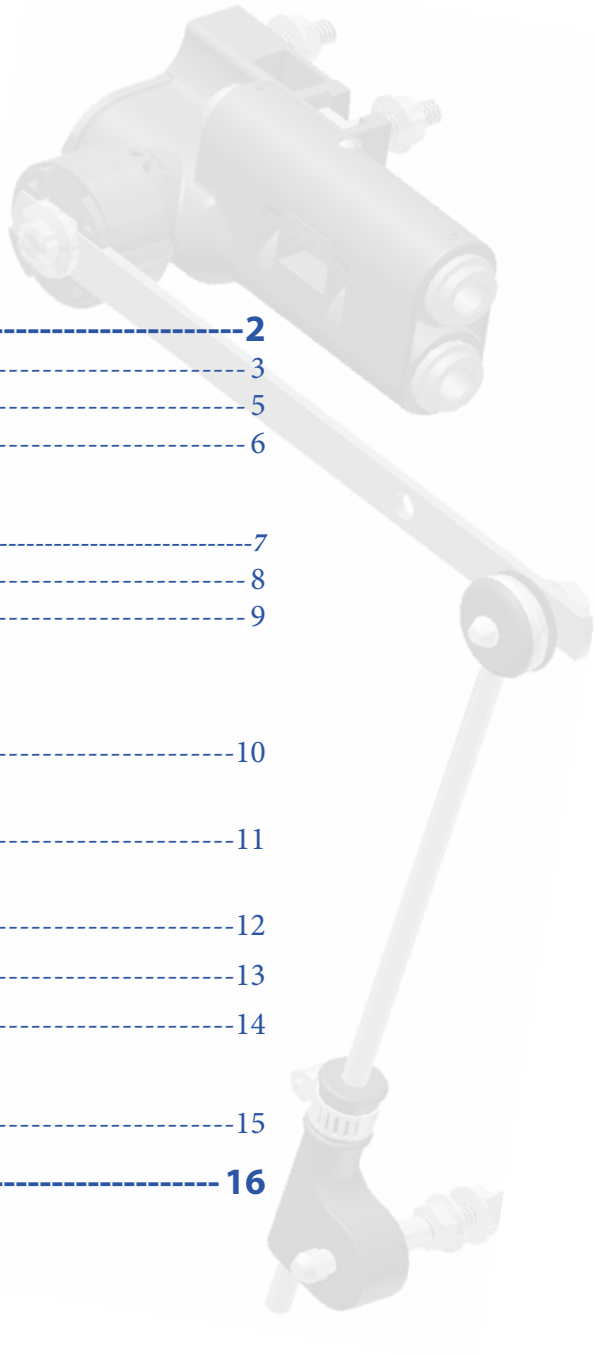
Extreme Air™ HCV HEIGHT CONTROL KIT INSTALLATION GUIDE



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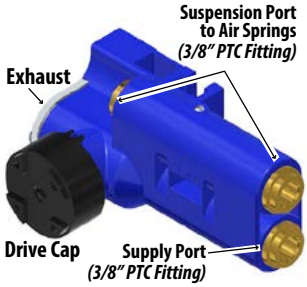
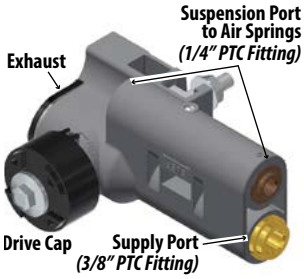
Height Control Valve (HCV) – Identification

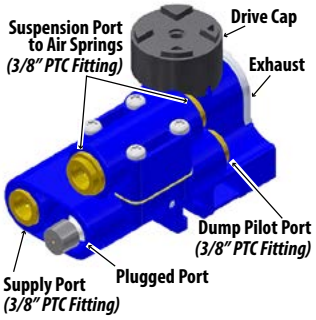
Standard HCV - Non-Dump

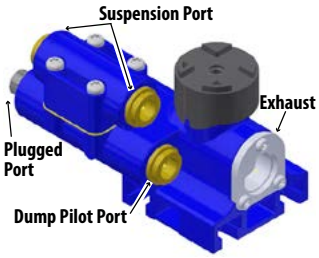


Lo-Flo HCV - Non-Dump
(HCV body is black, not blue)

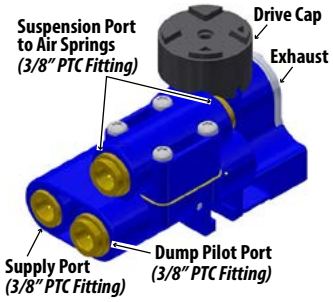


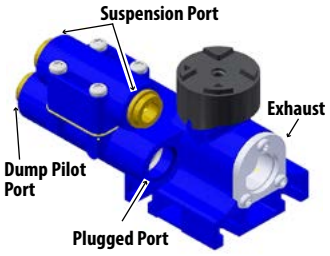
Height Control Valve - Pressure Dump Configuration





Height Control Valve - Zero-Pressure Dump Configuration





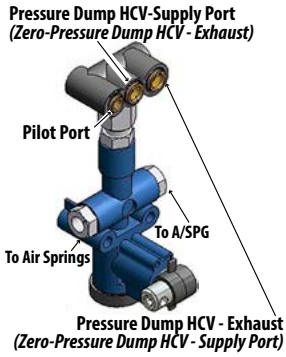
Pressure-Dump HCV:
The dump pilot port cannot be plugged if the HCV dump feature is not used.

Plumb the dump pilot port with at least 6-inches of air line tubing open to the atmosphere at one end.

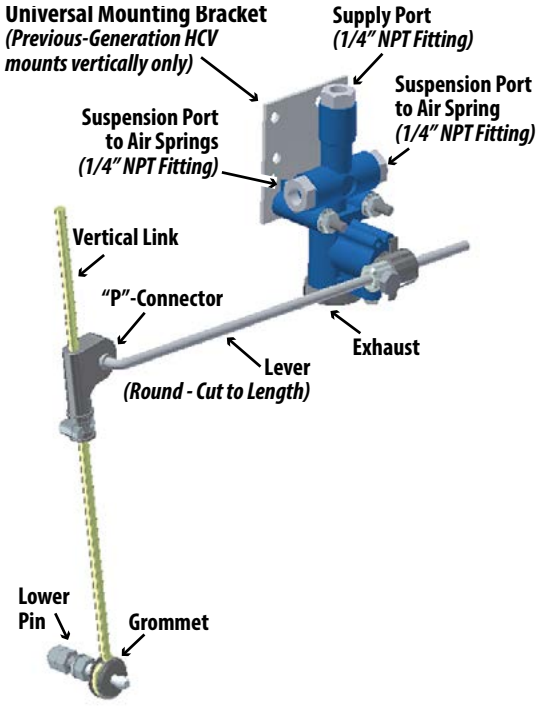
Zero Pressure-Dump HCV:
Dump pilot port must be plumbed.

The Zero-Pressure Dump HCV requires minimum 75-psi pressure at the pilot port for normal operation.

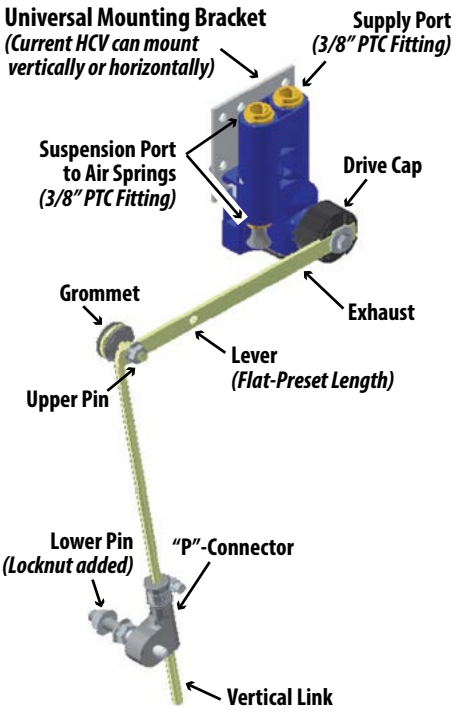
Previous Generation HCV/HCK (Obsolete)



Previous Generation-Dump HCV



Current Standard (Non-Dump) HCV/HCK



Notes and Cautions

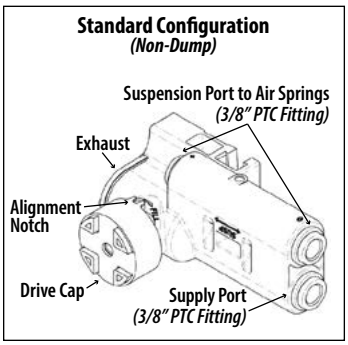
This publication utilizes two types of service note definitions to provide important safety guidelines for suspension operation:

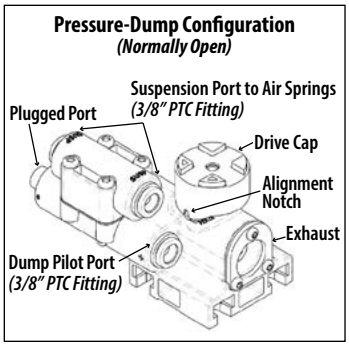
"NOTE" - Additional work instructions/procedures to complete tasks and ensure supension components function properly.

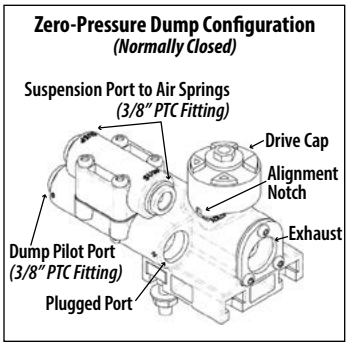
CAUTION - Indicates hazardous situation/unsafe practice that could result in equipment damage/serious injury if not avoided.

The Ridewell Extreme Air® Height Control Kit (HCK) adds and exhausts air from the air springs to maintain vehicle ride height. The HCK assembly consists of one lever connected to the height control valve (HCV) with a rod arm (vertical link) connected to the lower mounting bracket (Figure 1).

CAUTION The installer is responsible for making sure that the air system requirements comply with all appropriate Federal Motor Vehicle Safety Standards.







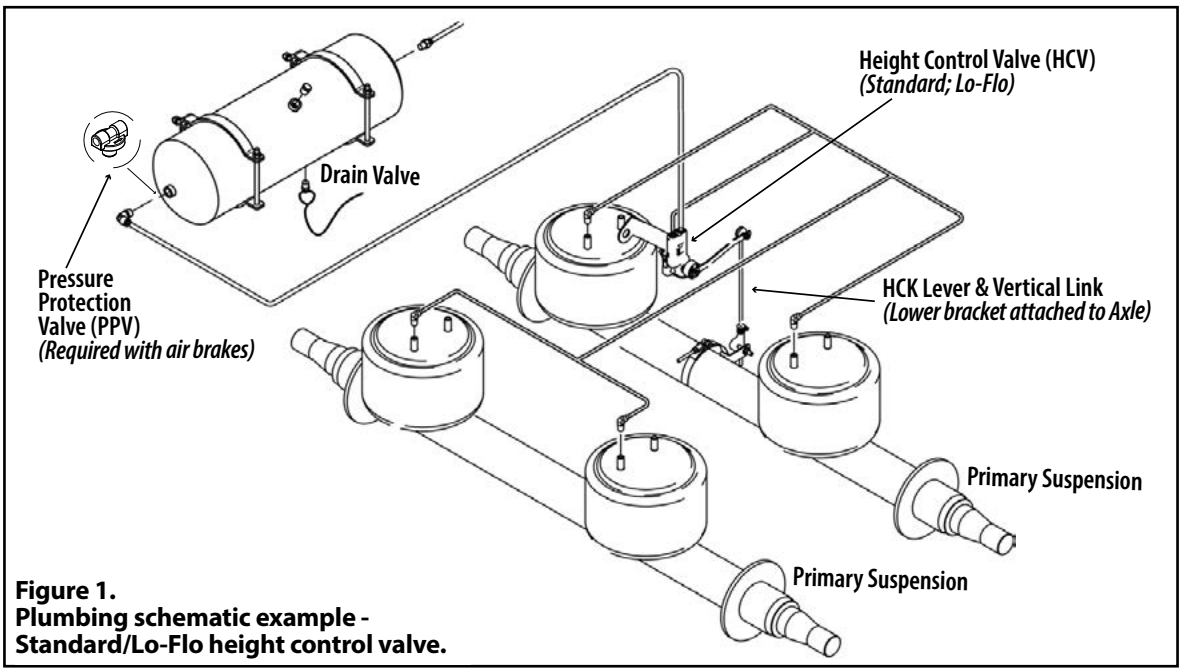


Figure 1.
Plumbing schematic example - Standard/Lo-Flo height control valve.

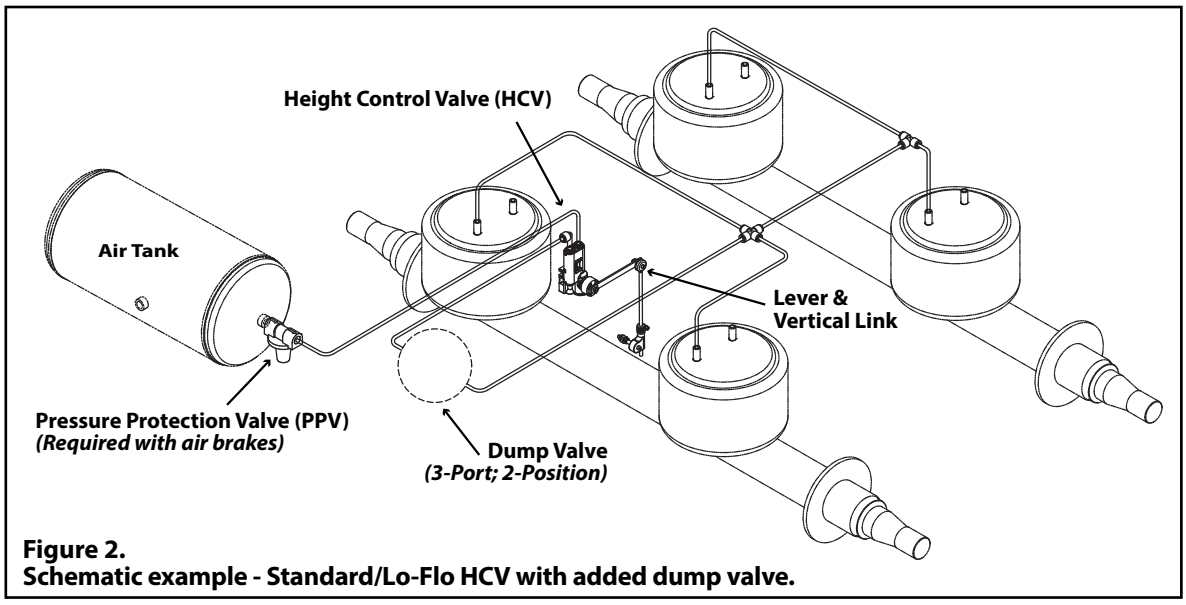
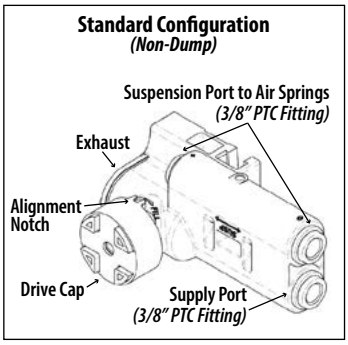
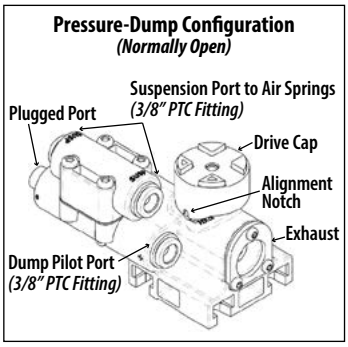
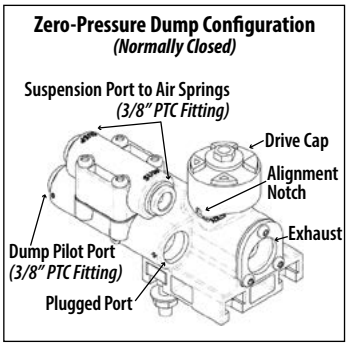


Figure 2.
Schematic example - Standard/Lo-Flo HCV with added dump valve.

HCV Plumbing Schematic Examples







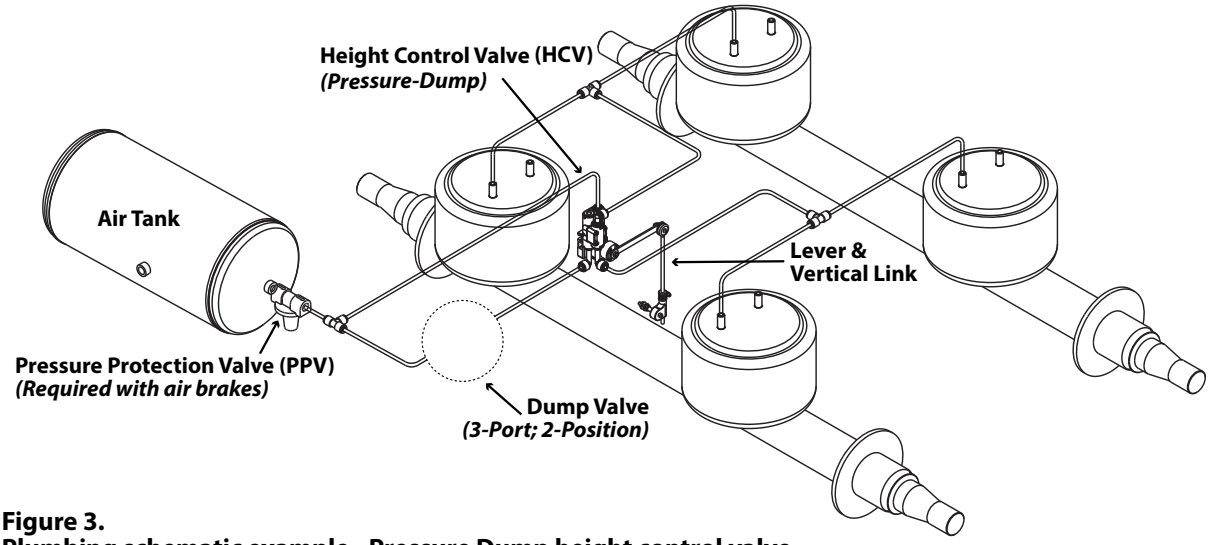


Figure 3.
Plumbing schematic example - Pressure Dump height control valve.

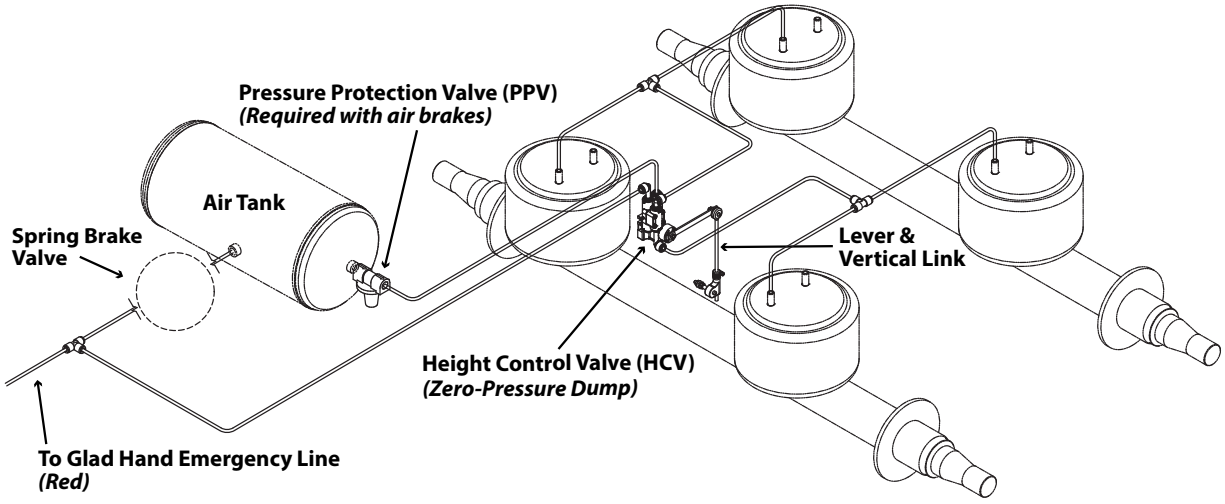


Figure 4.
Plumbing schematic example - Zero-Pressure Dump height control valve

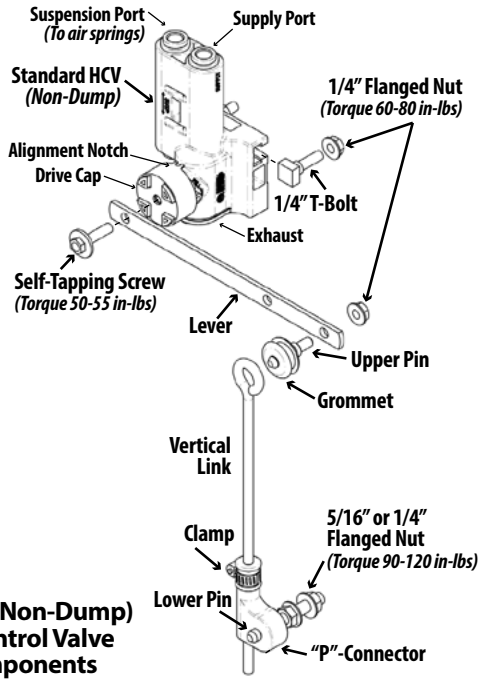


Figure 5.
Standard (Non-Dump) Height Control Valve (HCK) Components

Extreme AIR™ HCV – HCK Installation Procedure

Height control valve ports use push-to-connect (PTC) fittings to 3/8" tubing.

HCV exhaust port (rubber-boot end) should be installed at or below the horizontal position.

- **Pressure-Dump HCV:**
  The dump pilot port cannot be plugged if the dump feature is not used.
  Plumb the dump pilot port with at least 6" of air line tubing open to the atmosphere at one end.
- **Zero Pressure-Dump HCV:** The dump pilot port must be plumbed.
  The Zero Pressure-Dump height control valve requires a 75-psi minimum pressure at the pilot port for normal operation.
- Air tank pressure protection valve (PPV) is required when the air tank is shared with an air brake system.
- The installer is responsible for air system installation compliance with all federal/state requirements such as "FMVSS 121 for Air Brake Systems."

Installation

Exhaust all pressure from the air system. Wear the proper eye protection and appropriate personal protective equipment at all times.

Park the vehicle on a level, debris-free surface. Chock the wheels to prevent movement.

⚠CAUTION Failure to provide proper support, chock vehicle's wheels or exhaust the air system could allow vehicle movement that could result in serious injury.

1. Raise the suspension/axle system to the desired ride height and support.
2. Set drive cap alignment notch to the center (neutral) position. Lever moves up to fill ("FILL"); down to exhaust ("EXH"). Attach lever.
   Torque to 50-55 in-lbs (Figure 5).
3. Mount HCK lever assembly to the vehicle mounting bracket with two T-bolts. Torque to 60-80 in-lbs.
4. Attach "P"-Connector to lower mounting bracket with lower pin. Torque to 90-120 in-lbs (Figure 5).
5. Set lever to neutral (center) position. Slide vertical link into "P"-Connector. Slide rod until grommet reaches the same height as the lever (Figure 6).
   Attach vertical link to lever with the upper pin. Torque to 60-80 in-lbs. Tighten P-Connector band clamp to hold the rod in place.
   Cut and remove excess rod, leaving about one-inch of the rod beneath the P-Connector.
6. Install the air lines to the height control valve supply port and to the suspension and dump ports.
   Pressurize system and check for leaks.
7. Remove suspension/axle system supports. Lower suspension/axle to ground.

Operational Check

Move suspension through entire range of travel. Verify HCK lever can travel through full jounce and rebound movement with no binding, toggling or interference with any other component.

1. Raise the suspension by manually rotating the lever arm 20-30 degrees towards the "FILL" position. Hold the lever in place until air springs inflate. Rotate lever down to exhaust the air springs.
   NOTE: If air springs do not inflate:
   1.1. Verify air supply pressure is sufficient to open air tank pressure protection valve (usually greater than 70 psi).
   1.2. Check to make sure no suspension dump/exhaust feature(s) are not activated.
   1.3. Verify lever is oriented properly.
   NOTE: Drive bearing cap may need to be rotated 180 degrees and the lever re-positioned.
2. If air springs are inflating properly, manually rotate the lever 20-to-30 degrees down towards the Exhaust (EXH) position. Hold lever in place and check that air is escaping from the exhaust port.

⚠CAUTION Be sure that turning the wheels does not interfere with HCV/other components if HCK is installed on a steer axle.

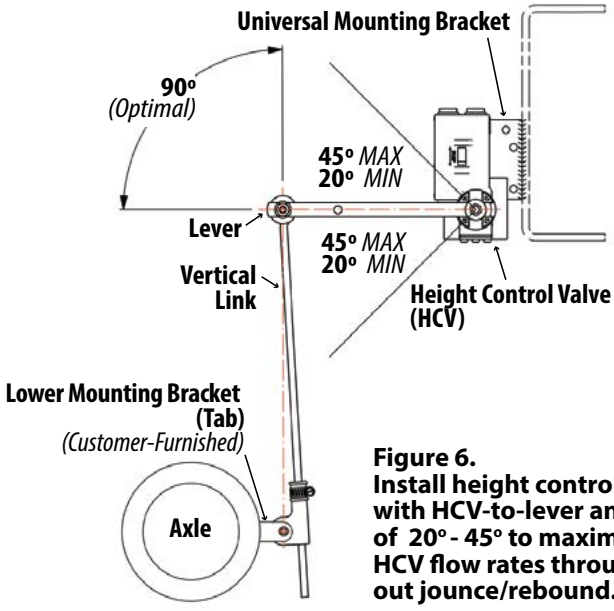


Figure 6.
Install height control kit with HCV-to-lever angle of 20° - 45° to maximize HCV flow rates throughout jounce/rebound.

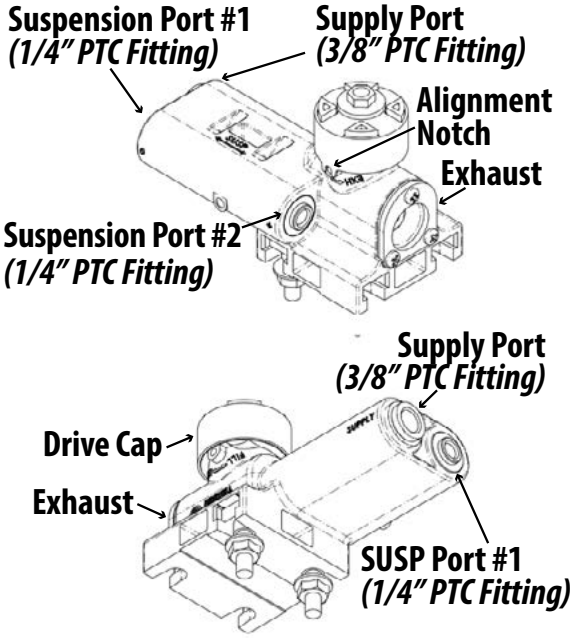


Figure 7.
Lo-Flo Height Control Valve

Extreme Air™ Lo-Flo HCV supply port is 3/8" push-to-connect (PTC) fitting. The delivery ports use 1/4" PTC fittings.

The HCV exhaust port (rubber-boot end) should be installed at or below a horizontal position.

NOTE: An air tank pressure protection valve (PPV) is required when the air tank is shared with an air brake system.

The installer is responsible for air system installation compliance with all federal/state requirements such as "FMVSS 121 for Air Brake Systems."

Installation

Exhaust all pressure from the air system. Wear proper eye protection and appropriate personal protective equipment at all times.

Park the vehicle on a level, debris-free surface. Chock the wheels to prevent movement. Raise the suspension/axle system to desired ride height and support.

CAUTION Failure to provide proper support, chock vehicle's wheels or exhaust the air system could allow vehicle movement that could result in serious injury.

1. Set HCV drive cap alignment notch to the center (neutral) position. Lever moves up to fill ("FILL"); down to exhaust ("EXH").
   Attach lever. Torque to 50-55 in-lbs.
2. Mount HCK lever assembly to vehicle mounting bracket with two T-bolts. Torque to 60-80 in-lbs.
3. Attach "P"-Connector to lower mounting bracket with the lower pin. Torque to 90-120 in-lbs.

Set lever to neutral (center) position.
Slide vertical link into "P"-Connector. Slide the rod up-and-down until the grommet reaches the same height as the lever (Figure 8).
Attach the vertical link to lever with the upper pin. Torque to 60-80 in-lbs.
Tighten P-Connector band clamp to hold the rod in place. Cut and remove excess rod, leaving about one-inch of rod beneath the P-Connector.

4. Install air lines to HCV supply port and to suspension ports. Pressurize system. Check for leaks.
5. Remove the suspension/axle system supports. Lower suspension/axle to ground.

Operational Check

Move suspension through entire range of travel. Verify the HCK lever can travel through full jounce and rebound movement with no binding, toggling or interference with any other component.

1. Raise the suspension by manually rotating lever arm 20-30 degrees towards the "FILL" position. Hold lever in place until air springs inflate.
   Rotate lever down to exhaust the air springs.
   NOTE: If air springs do not inflate:
   1.1. Verify air supply pressure is sufficient to open pressure protection valve (usually > 70 psi).
   1.2. Check to make sure that suspension dump/exhaust feature(s) is not activated.
   1.3. Verify lever is oriented properly.
   NOTE: The drive bearing cap may need to be rotated 180 degrees and lever re-positioned.
2. If air springs are inflating properly, manually rotate the lever 20-to-30 degrees down towards the Exhaust (EXH) position. Hold lever in place and check that air is escaping from the exhaust port.

CAUTION Be sure that turning the vehicle wheels does not interfere with the height control valve/other components if the HCK is installed on a steer axle.

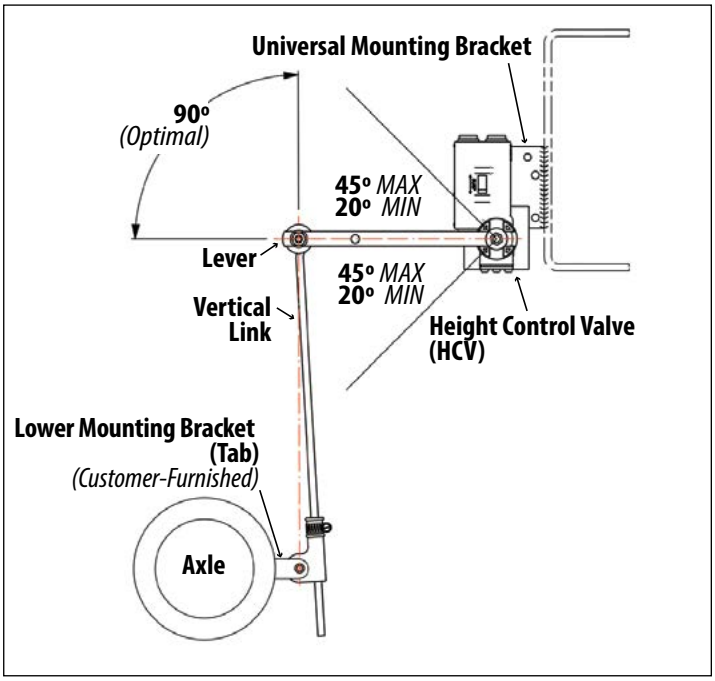


Figure 8.
Install height control kit with HCV-to-lever angle of 20° - 45° to maximize HCV flow rates throughout jounce/rebound.

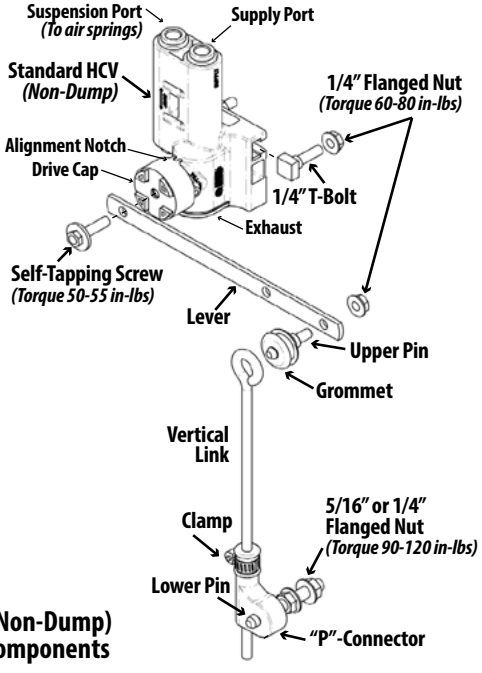
Height Control Kit (HCK) component options are designated by the numbers "0-9" and-or the letters "A-P" on the Engineering Drawing 6300AAAA00. The "X" symbol in the part number refers to the height control kit component listed on the drawing.

63	X	X	X	X	A	X	X	X
HCK Series Part Number	Height Control Valve (0-3; "9" - No HCV)	Pressure Protection Valve (0 - No PPV; 1-2)	Lever (A-E)	Vertical Link (A-P; No "i" "O")	Reserved-Future Use	Lower Pin ASY (A-K; No "i")	Upper Mounting Bracket (0-6)	Air Fittings (0-9; A-D)

Suspension Model	HCK Reference	Comments
Most Ridewell Air-Ride Primary Axle Trailer Models	**63XXBFAB13**	Universal Height Control Kit Option *(Typically mounted to axle)*
RAR-260 15K; 25K; 30K Underslung ***(All models)***	**63XXCFAJ6X**	2605208 uses 63XXBDAB0X
RAR-260 25K; 30K Overslung ***(All models)***	**63XXBFAJ3X**	
RAR-260 25K Yoke Mount ***(All models)***	**63XXBFAB13**	Universal Height Control Kit Option
RAR-266 25K Overslung – 5" Axle ***(All models)***	**63XXBFAJ3X**	266311402 uses 63XXBFAG3X
RAR-266 25K Overslung – 5 3/4" LDA ***(All models)***	**63XXBFAK3X**	
RAR-266 25K U/S (Low-Mount) ***(All models)***	**63XXECAK3X**	
(Not available for some models) **RAR-240 15K, 25K,; 30K Underslung** **RAR-243 25K Underslung**	**63XXCGAE0X**	See 240 - N/A models chart
RAR-240 25K; 30K Overslung ***(All models except N/A)***	**63XXCGAE2X**	See 240 - N/A models chart
RAR-240 25K LKS Overslung ***(All models)*** **RAR-240 25K; 30K Yoke Mount** ***(All models)***	**63XXBFAB13**	Universal Height Control Kit Option
RAR-244 8K Underslung	**6330DMAE20**	NOTE: 244-8K uses Lo-Flo HCV
RAR-200 25K; 30K ***(All models)***	**63XXBFAG3X**	2000112 use 63XXBFAG0X
RAR-200 23K Narrow-Top ***(All models)***	**63XXBFAG2X**	

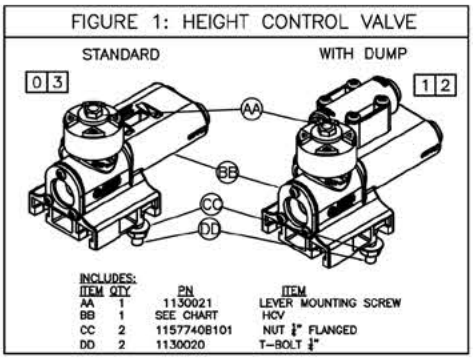
RAR 240 Models - Integrated HCK Not Available Use 63XXBFAB13 (Universal Height Control Kit)

25K Underslung	30K Underslung	25K Overslung
2400014	2400814	2400068
2400048	2400816	2400714
2400054	2400818	**30K Overslung**
2400064	2400901	2400060
2400614	2400902	2400160
2400200 - 2400213	2400903	2400260
2401206	2400904	
2401213	2400905	
	2401814	



Standard (Non-Dump) HCV/HCK Components

HCK Valve/Lever/Linkage Component Options

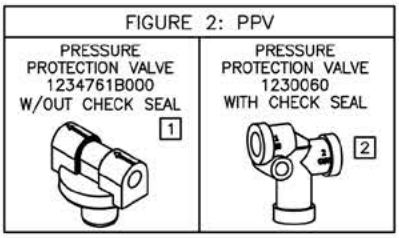


63 0 0 A A

SERIES

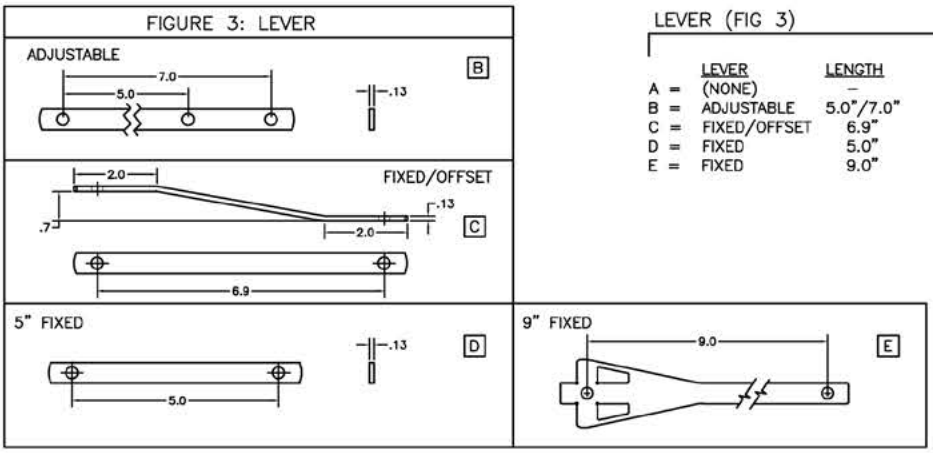
HEIGHT CONTROL VALVE (FIG 1)

ITEM BB	VALVE	VALVE NO	REF. ⚠ KIT NO
0 =	HCV, STANDARD	6205004	6255004
1 =	HCV, PRESSURE DUMP	6205005	6255005
2 =	HCV, ZERO PRESSURE DUMP	6205006	6255006
3 =	HCV, LO-FLO	6205007	6255007
9 =	NO HCV		



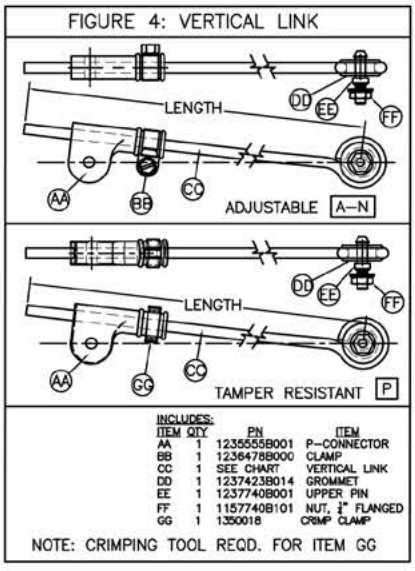
PRESSURE PROTECTION VALVE (FIG 2)

ITEM	PART NO
0 = (NONE)	–
1 = PRESSURE PROTECTION VALVE	1234761B000
2 = PPV WITH CHECK SEAL	1230060



LEVER (FIG 3)

	LEVER	LENGTH	PART NO
A =	(NONE)	–	–
B =	ADJUSTABLE	5.0"/7.0"	6212001
C =	FIXED/OFFSET	6.9"	6212002
D =	FIXED	5.0"	6212003
E =	FIXED	9.0"	6212005



VERTICAL LINK (FIG 4)

	LENGTH	CLAMP TYPE	VERTICAL LINK ITEM CC	REF. ⚠ KIT NO
A =	(NONE)		–	–
B =	5.50"	BB	1237423B050	6210010
C =	9.00"	BB	1237423B049	6210011
D =	10.50"	BB	1237423B018	6210012
E =	12.00"	BB	1237423B045	6210013
F =	14.00"	BB	1237423B015	6210014
G =	15.00"	BB	1237423B044	6210015
H =	16.00"	BB	1237423B017	6210016
J =	18.00"	BB	1237423B016	6210017
K =	19.90"	BB	1237423B019	6210018
L =	21.00"	BB	1237423B043	6210019
M =	7.00"	BB	1237423B051	6210020
N =	25.00"	BB	1237423B020	6210021
P =	15.00"	GG	1237423B044	6210022

⚠ KITS LISTED FOR REPLACEMENT PURPOSES ONLY

Engineering Drawing #6300AAAA00

(Drawing continued-next pg)

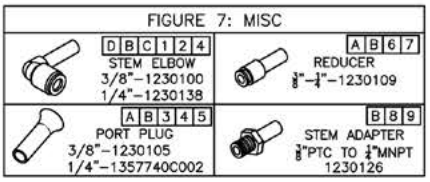
A A 0 0 (-A A)

PACKAGING
(BLANK) = (NOT SPECIFIC)
-AA = TWO DIGIT CODES ARE CUSTOMER SPECIFIC.

FITTINGS (FIG 7)

ITEM	QUANTITY ¼"ELBOW	⅜"ELBOW	¼"PLUG	⅜"PLUG	REDUCER	ADAPTER
0 = (NONE)	–	–	–	–	–	–
1 = STEM ELBOW ⅜"	0	1	0	0	0	0
2 = STEM ELBOW ⅜"	0	2	0	0	0	0
3 = PLUG ⅜"	0	0	0	1	0	0
4 = STEM ELBOW & PLUG ⅜"	0	1	0	1	0	0
5 = PLUG ¼"	0	0	1	0	0	0
6 = REDUCER	0	0	0	0	3	0
7 = REDUCER	0	0	0	0	1	0
8 = STEM ADAPTER	0	0	0	0	0	3
9 = STEM ADAPTER	0	0	0	0	0	4
A = REDUCER & PLUG ⅜"	0	0	0	1	1	0
B = UNIVERSAL	0	2	0	1	3	3
C = STEM ELBOW ¼"	2	0	0	0	0	0
D = STEM ELBOW ⅜"	0	3	0	0	0	0

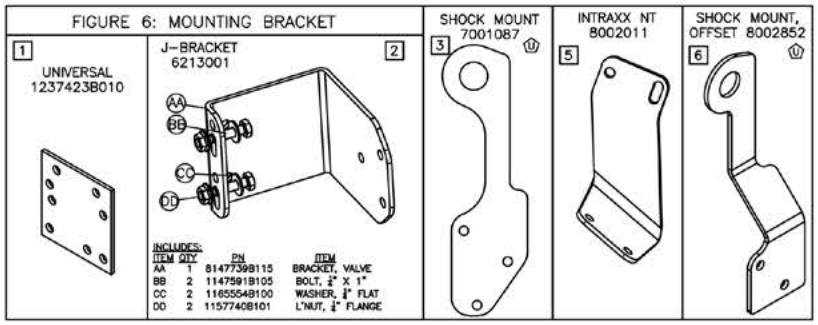
FIGURE 7: MISC



MOUNTING BRACKET (FIG 6)

ITEM		BRACKET KIT NO
0 =	(NONE)	–
1 =	UNIVERSAL	1237423B010
2 =	J–BRACKET	6213001 ⚠
3 =	SHOCK MNT	7001087 Ⓤ
4 =	–	–
5 =	INTRAXX NT	8002011
6 =	SHK MNT OFFSET	8002852 Ⓤ

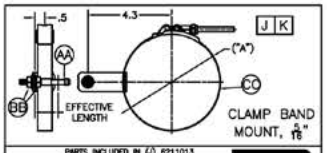
FIGURE 6: MOUNTING BRACKET



LOWER PIN ASSEMBLY (FIG 5)

RESERVED

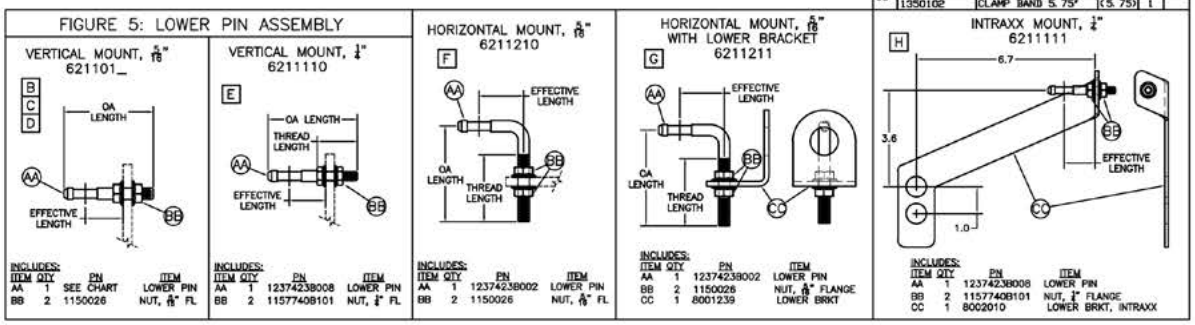
PIN ASSEMBLY TYPE	OA LENGTH	THREAD LENGTH	EFFECTIVE LENGTH	LOWER PIN ITEM AA	REF ⚠ KIT NO
A = (NONE)	–	–	–	–	–
B = VERTICAL MOUNT, ⅜"	2.50"	1.13"	1.00"	1237423B003	6211010
C = VERTICAL MOUNT, ⅜"	2.00"	1.00"	.75"	1237423B013	6211011
D = VERTICAL MOUNT, ⅜"	4.25"	1.88"	2.50"	1237423B102	6211012
J = VERT MNT, CLAMP, ⅜"5.00"	2.50"	1.13"	1.00"	1237423B003	6211013
K = VERT MNT. CLAMP, ⅜"5.75"	2.50"	1.13"	1.00"	1237423B003	6211014
E = VERTICAL MOUNT, ¼"	2.50"	1.13"	1.00"	1237423B008	6211110
F = HORIZONTAL MOUNT, ⅜"	2.68"	1.88"	1.25"	1237423B002	6211210
G = HORIZONTAL MNT&BKT, ⅜"	2.68"	1.88"	1.25"	1237423B002	6211211
H = INTRAXX MOUNT, ¼"	2.50"	1.13"	1.00"	1237523B008	6211111



PARTS INCLUDED IN (J) 6211013
PARTS INCLUDED IN (K) 6211014

ITEM No.	PART No.	PART DESCRIPTION	DIM. "A"	No. NEEDED	No. NEEDED
AA	1237423B003	LOWER PIN		1	1
BB	1150026	NUT, 5/16 FLANGE		2	2
CC	1350101	CLAMP BAND 5.00"	(5.00)		1
	1350102	CLAMP BAND 5.75"	(5.75)	1	

FIGURE 5: LOWER PIN ASSEMBLY



Engineering Drawing #6300AAAA00

(Continued from previous page)

266 LDA (OSW) - 23K; 25K and 266 LDA USW (Low Mount) - 25K

HCK Trailer Configuration					
1	Height Control Valve (HCV)	4	Vertical Link	7	Lower Pin Assembly
2	Lever	5	"P" Connector	8	Lower Mounting Bracket
3	Upper Pin Assembly	6	Clamp for "P" Connector	9	Upper Mounting Bracket

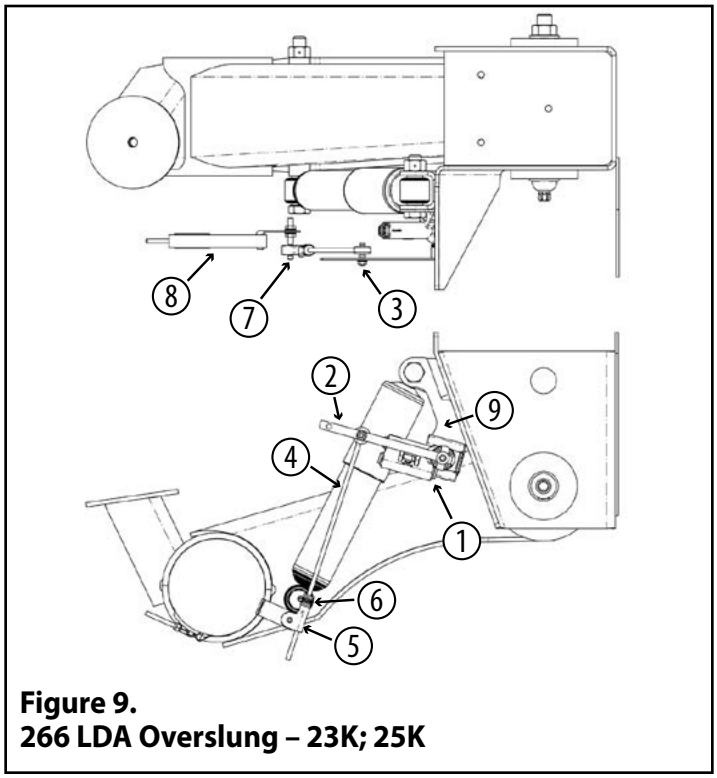


Figure 9.
266 LDA Overslung – 23K; 25K

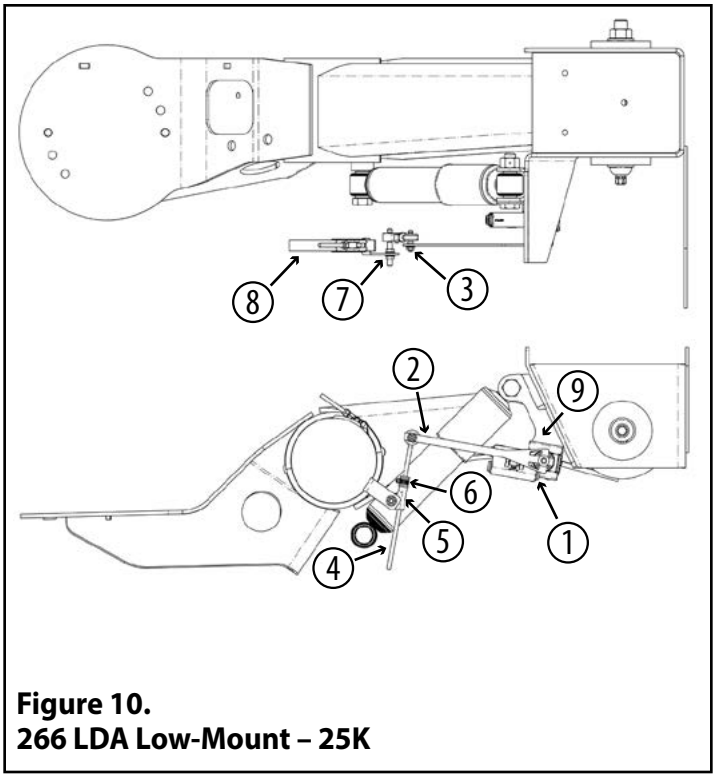


Figure 10.
266 LDA Low-Mount – 25K

260 USW - 15K; 25K; 30K and 260 OSW - 25K; 30K

HCK Trailer Configuration					
1	Height Control Valve (HCV)	4	Vertical Link	7	Lower Pin Assembly
2	Lever	5	"P" Connector	8	Lower Mounting Bracket
3	Upper Pin Assembly	6	Clamp for "P" Connector	9	Upper Mounting Bracket

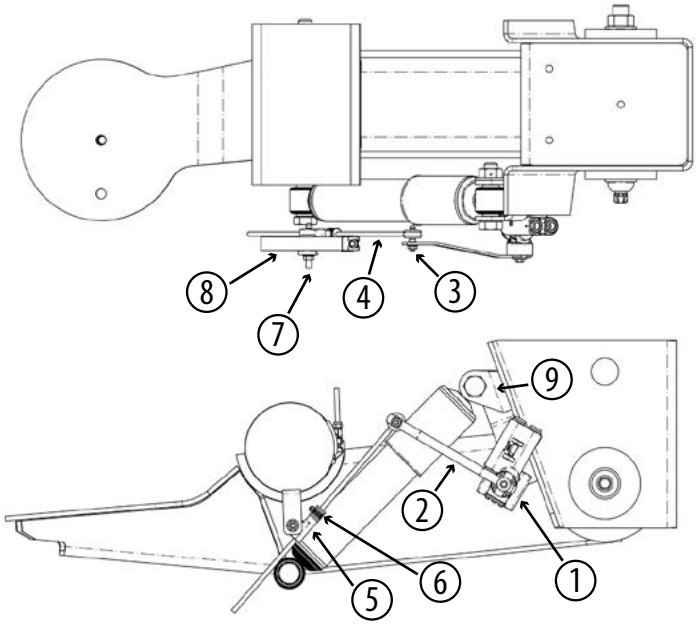


Figure 11.
260 Underslung – 15K

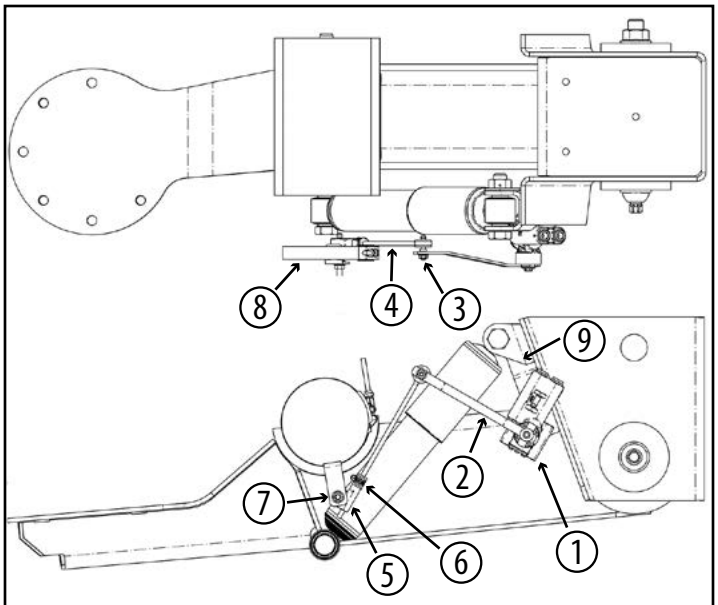


Figure 12.
260 Underslung – 25K or 30K

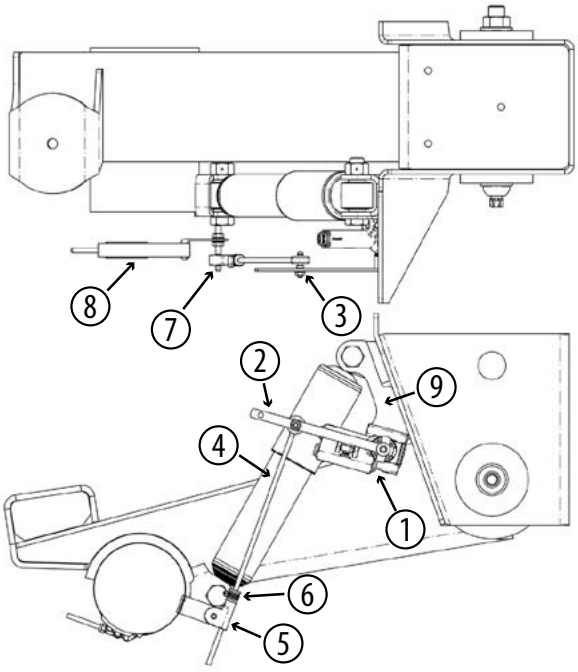


Figure 13.
260 Overslung – 25K

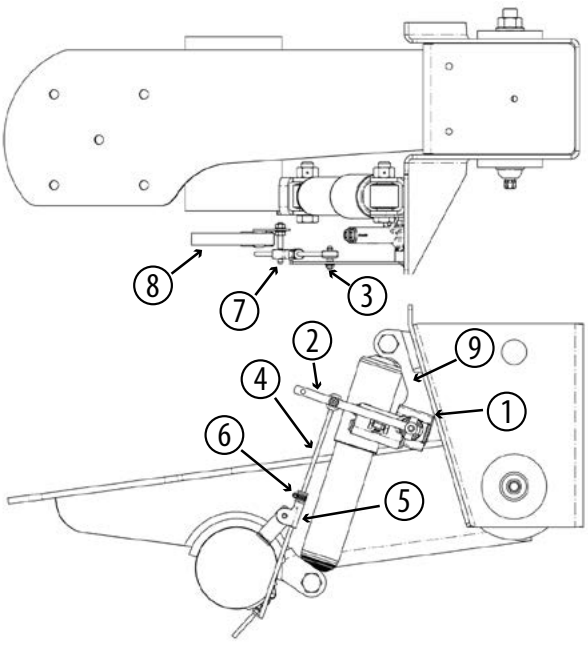


Figure 14.
260 Overslung – 30K

240 USW - 15K; 25K; 30K or 243 USW - 25K and 240 OSW - 25K; 30K

HCK Trailer Configuration					
1	Height Control Valve (HCV)	4	Vertical Link	7	Lower Pin Assembly
2	Lever	5	"P" Connector	8	Lower Mounting Bracket
3	Upper Pin Assembly	6	Clamp for "P" Connector	9	Upper Mounting Bracket

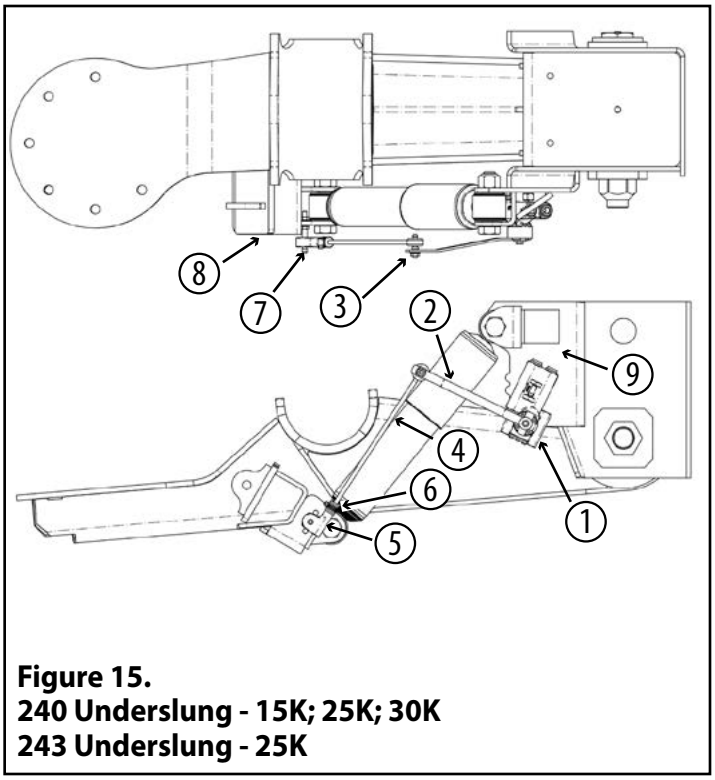


Figure 15.
240 Underslung - 15K; 25K; 30K
243 Underslung - 25K

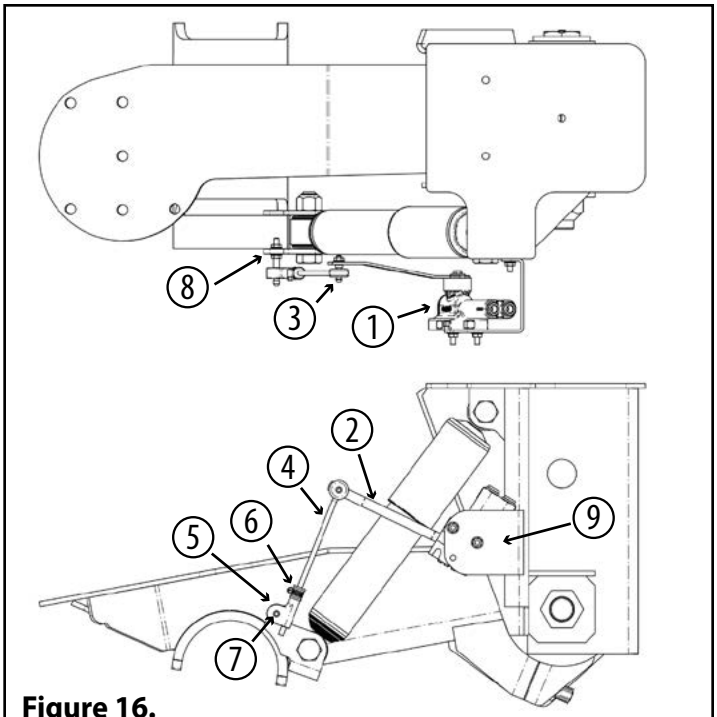


Figure 16.
240 Overslung - 25K

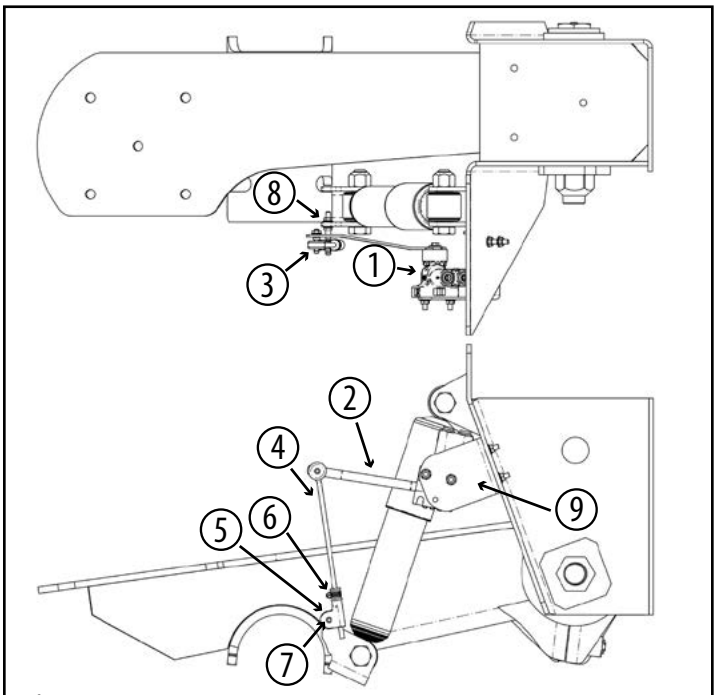


Figure 17.
240 Overslung - 30K

HCK Trailer Configuration					
1	Height Control Valve (HCV)	4	Vertical Link	7	Lower Pin Assembly
2	Lever	5	"P" Connector	8	Lower Mounting Bracket
3	Upper Pin Assembly	6	Clamp for "P" Connector	9	Upper Mounting Bracket

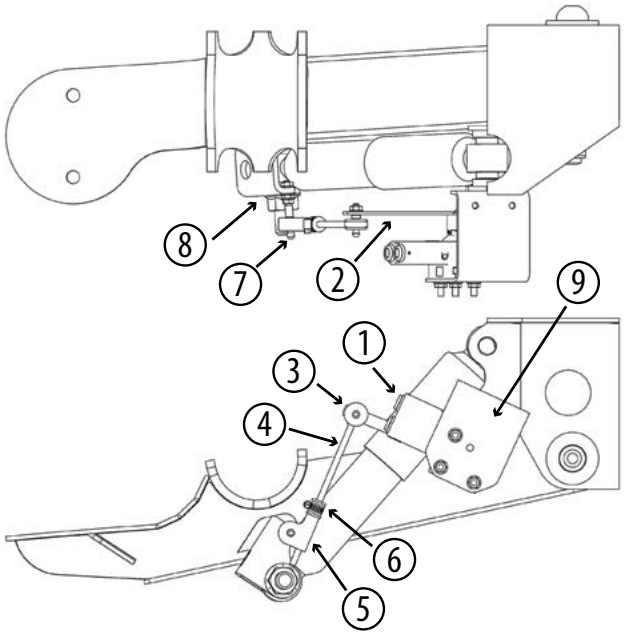


Figure 18.
244 - 8K (Featheride)

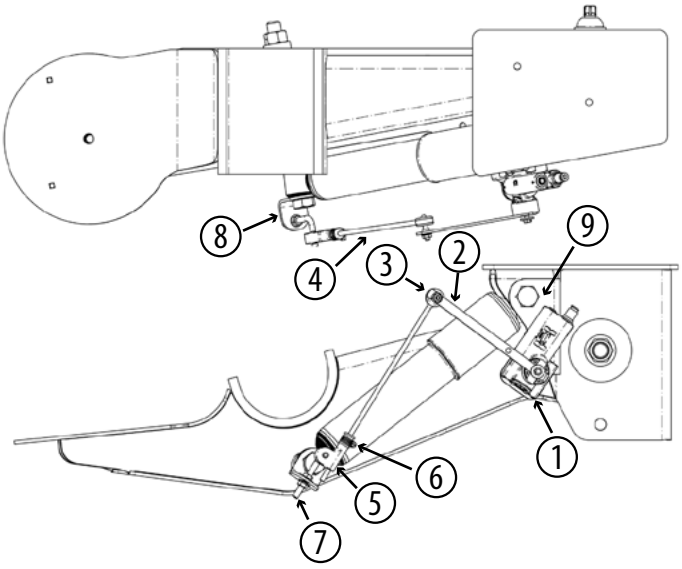


Figure 19.
244 Underslung-16K (HCK #6241027)

RAR 200 OSW - 23K; 25K; 30K

HCK Trailer Configuration					
1	Height Control Valve (HCV)	4	Vertical Link	7	Lower Pin Assembly
2	Lever	5	"P" Connector	8	Lower Mounting Bracket
3	Upper Pin Assembly	6	Clamp for "P" Connector	9	Upper Mounting Bracket

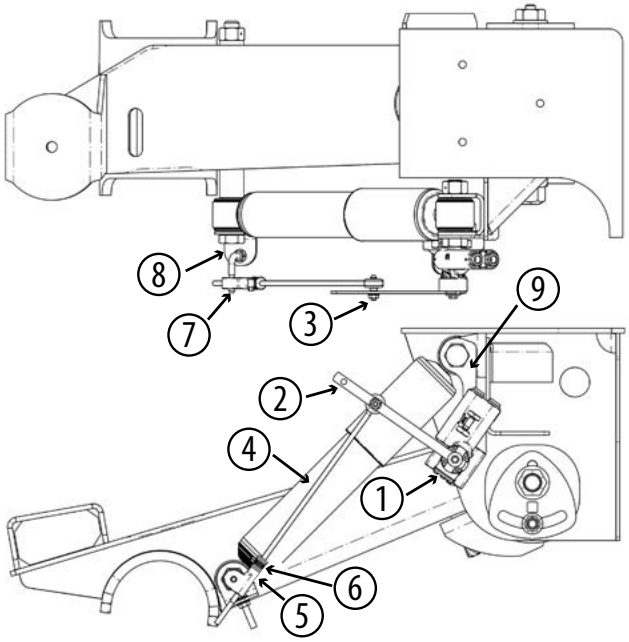


Figure 20.
200 Overslung - 25K; 30K

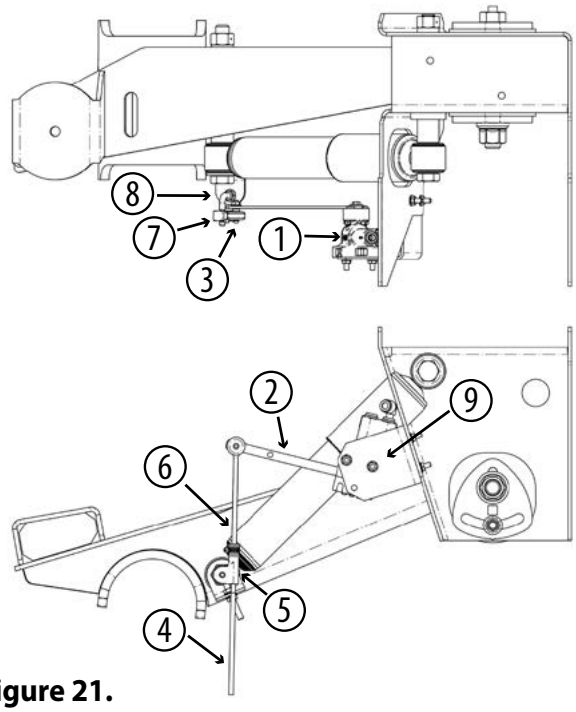


Figure 21.
200 Overslung - 23K Narrow Top

Height Control Valve /Height Control Kit Installation – Troubleshooting

A "Bad HCV" is the common misdiagnosis of the non-working air system. Most problems can be traced to other parts of the air system such as pinched/damaged lines, other valves or loose fittings. Repair any air system problems found before resuming troubleshooting.

Problem	Possible Cause	Corrective Action
Ride Height is too high or too low.	___ HCV is out of adjustment or not installed correctly.	___ Refer to engineering drawing for ride height specifications. Check HCV adjustment.
HCV is not receiving air/ HCV is not delivering air to the air springs.	___ Blocked air supply line.	___ Verify air lines are pressurized by removing supply line at HCV. Check for pinched lines.
	___ Air tank is not filling/ reaching set pressure.	___ Verify the air tank pressure using a manual/in-line pressure gauge.
	___ The air tank Pressure Protection Valve (PPV) is not working correctly.	___ Check PPV operation by making sure valve opens when system reaches the desired pressure setpoint (usually greater than 70 psi).
	___ Pilot port is not plumbed or is plumbed incorrectly.	___ Check HCV configuration and reinstall if necessary – Non-Dump; Pressure-Dump (Normally Open); Zero-Pressure Dump (Normally Closed).
Air springs fill but do not exhaust.	___ Obstructed air line.	___ Disconnect linkage. Rotate lever to the down position (exhaust). If the air springs remain inflated, check for pinched/blocked lines.
	___ HCV installed backwards.	___ Check installation. Reinstall if necessary.
	___ Supply line installed to suspension port	___ Move air supply line to height control valve supply port.
Air system leaks down in a short period of time.	___ HCV installed backwards.	___ Disconnect HCV linkage. Rotate lever to up position (fill). If air springs do not inflate, reinstall HCV.
	___ Leak in air system beyond accepted standards.	___ To find leak in the HCV-area, pressurize system and spray soapy water solution onto the valve and lines. Check for bubbles (leaks): No HCV-area leak found: Do not remove valve, check rest of system for leaks. Check that tubing cuts are straight and smooth. Re-cut and reassemble if necessary.

Preventive Maintenance

- Drain all moisture from air tank(s) at regular intervals – daily if possible.
- Periodically check for pinched/damaged lines or loose fittings that could cause an air leak in the system. Repair any problems found.
- Routinely inspect the entire air system to confirm height control kit is maintaining the desired ride height. Adjust linkage and re-torque fasteners as necessary.

Refer to these American Truck Association Technology & Maintenance Council (TMC) publications for additional information

RP 617 Air-System Contaminants Elimination Procedure

RP 619 Air System Inspection Procedure

RP 634 Ride Height Adjustment - Air Ride Suspensions

RP 643 Air-Ride Maintenance Guidelines

WARRANTY

Terms and coverage in this warranty apply only to the United States and Canada.

The Ridewell Corporation warrants the Automatic Height and Leveling Air Control Valve manufactured by it to be free from defects in material and workmanship for a period of 1 year from the date code molded into the body.

Warranty coverage is limited to the repair/replacement of valve parts. Coverage applies only to valves that have been properly installed, maintained and operated. No warranty applies to air lines, fittings, mounting hardware, actuating arm, linkage, or axle attachments.

Ridewell reserves the right to require any valve to be returned for inspection before claim is obtained. All returns must have transportation charges prepaid by the customer and accompanied with a complete written explanation of claimed defects and the circumstances of operational failure.

This non-transferable warranty is in lieu of all other expressed or implied warranties or representations, including any implied warranties of merchantability or fitness or any obligations on the part of Ridewell.

Ridewell will not be liable for any business interruptions, loss of profits, personal injury, any costs of travel delays or for any other special, indirect, incidental or consequential losses, costs or damages caused by Ridewell.

Contact the Ridewell Warranty Dept. at 417.833.4565 - Ext. 135, for complete warranty information.