



Installation Instructions

E-Carton Clamp High Performance Two-Position Relief Valve Kit 221196

This sheet provides installation instructions to remove and replace an existing solenoid operated two-position relief valve on Kimberly Clark electric trucks fitted with Cascade 33E Carton Clamps. The new relief valve provides high speed arm positioning when low clamping pressure is selected.

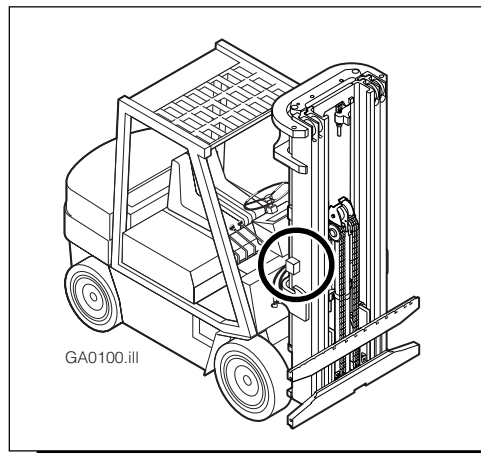
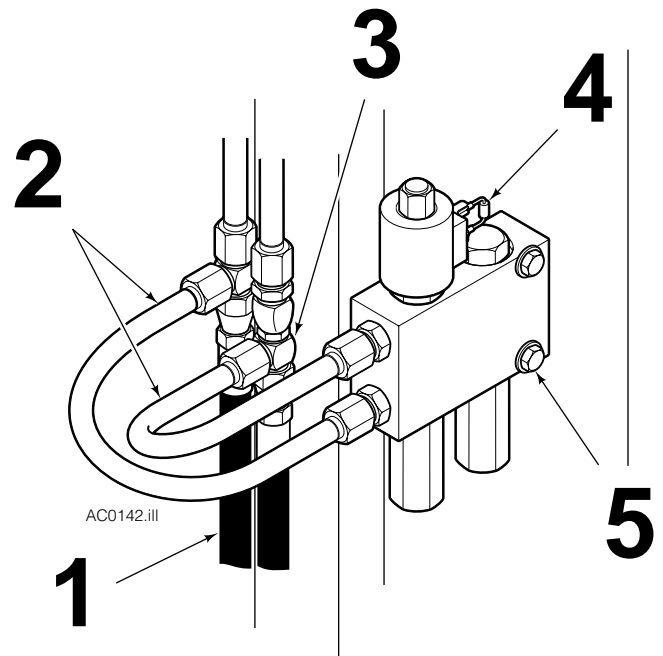
IMPORTANT: Verify that the relief valve is being mounted on **electric trucks with electronically-controlled auxiliary flow**. Valve 220491 may not work properly on other trucks.



WARNING: Before removing any hydraulic lines or components, relieve pressure in the Attachment hydraulic system. Turn the truck off and move the auxiliary control valve lever several times in both directions.

Remove old relief valve

- 1 Disconnect the CLAMP supply hoses from the 'T'-fittings on the mast. Tag hoses for reassembly.
- 2 Disconnect and remove the existing tubing between the 'T'-fittings and the relief valve.
- 3 Remove the 'T'-fittings from the mast tubing and install the two No. 8-8 straight SAE 37 ° union fittings provided in the kit.
- 4 Disconnect the electrical wires to the solenoid.
- 5 Remove the two capscrews fastening the existing relief valve to the mast and remove the valve.



Part No. 221195 R-1

cascade®

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Call: 1-800-CASCADE (227-2233)

OR

Write: Cascade Corporation, PO Box 20187, Portland, OR 97294-0187

To Order Parts . . .

Call: 1-888-CASCADE (227-2233)

OR

Write: Cascade Corporation, 2501 Sheridan Ave., Springfield, OH45505

Install new relief valve

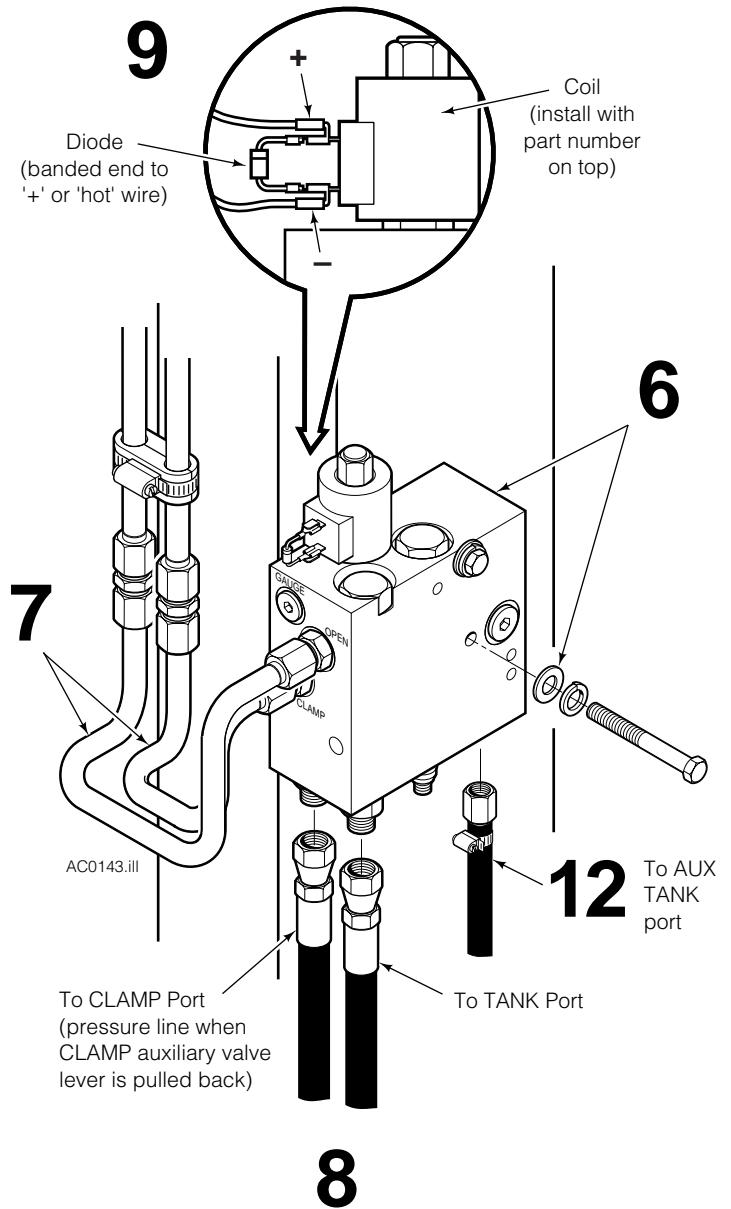
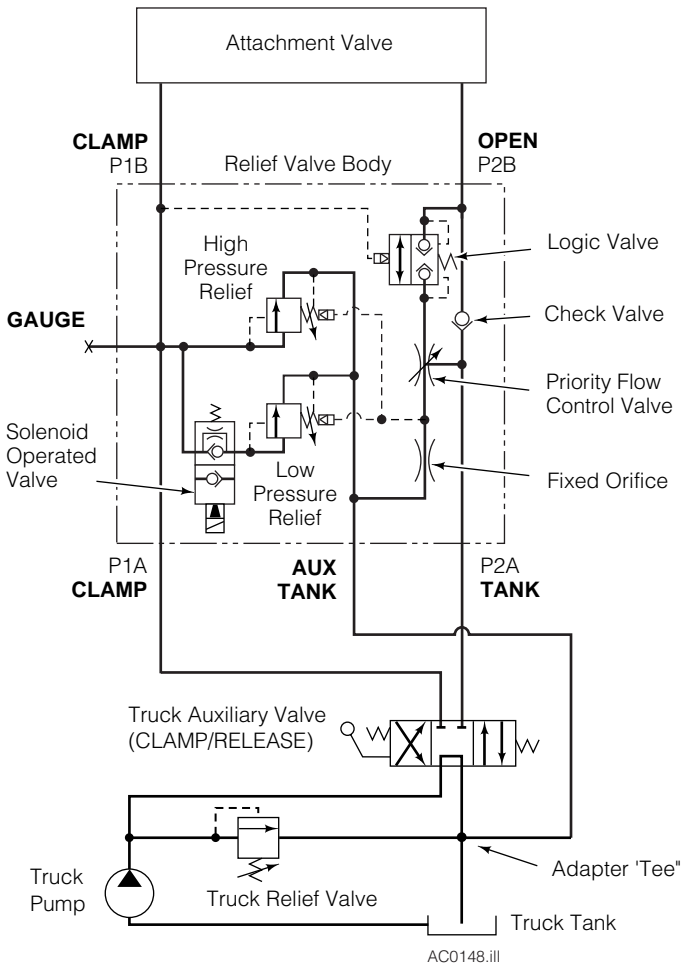
6 Install the new relief valve on the mast using the original mounting holes.

CAUTION: Check that the new capscrews are not too long. Use the washers provided in the kit to shim the capscrews as required.

7 Install the new tubing provided in the kit.

8 Reconnect the hydraulic supply lines to the bottom of the new relief valve. Make sure the hoses are connected to the correct port (see illustration).

9 Install the diode to the solenoid coil terminals and reconnect the electrical wires. Make sure the '+' or 'hot' wire is connected to the same terminal as the diode's banded end (see illustration).

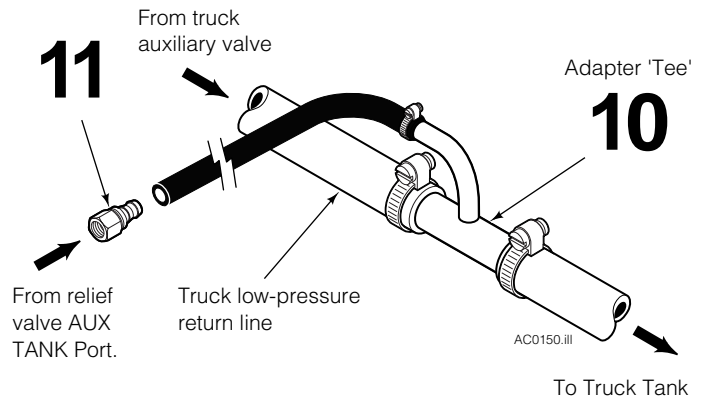


Install adapter 'tee'

10 Locate the truck low-pressure return line within the engine compartment. In a suitable location, cut the line and install the adapter tee supplied in the kit as shown.

11 Install the Push-Lok No. 8 JIC female fitting into one end of the kit-supplied low-pressure return line and secure with a hose clamp.

12 Determine the hose length required, and attach the hose to the relief valve AUX TANK port. Route the hose to the adapter tee, avoiding pinch and wear points. Tighten hose fittings and hose clamps. Start the truck and cycle the Clamp's arms several times. Check for leaks and proper operation.

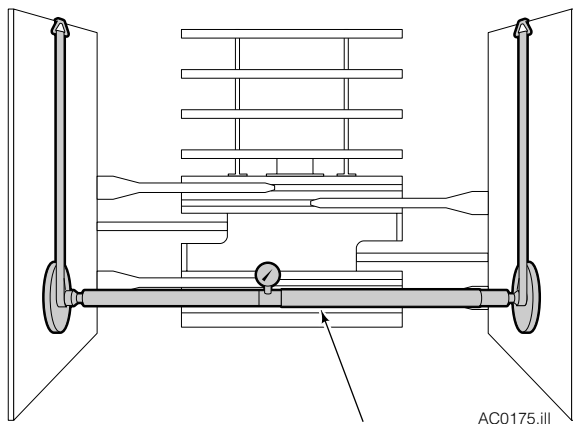


Adjust priority flow control cartridge (if necessary)

- 13** If arm closing speed is noticeably slow when testing the low pressure setting, the priority flow control valve may need adjustment.

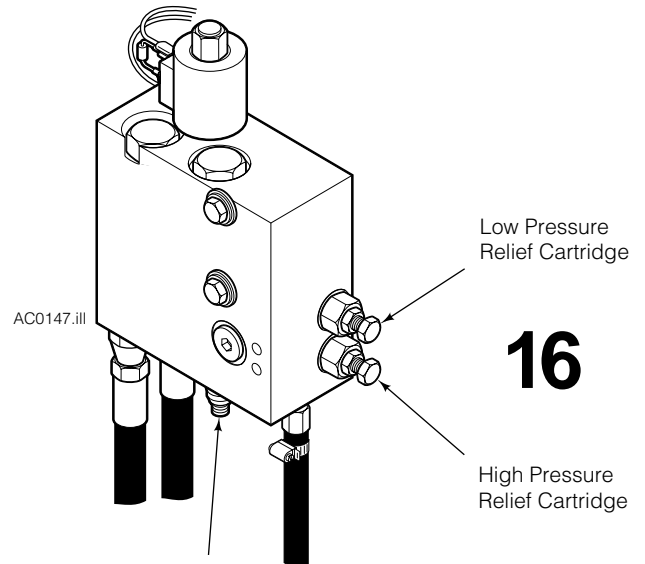
IMPORTANT: Verify that the relief valve is being mounted on an **electric truck with electronically-controlled auxiliary flow**. Valve 220491 may not work properly on other trucks.

- 14** Loosen jam nut on priority flow control cartridge and back adjustment screw all the way out (CCW). Turn screw in (CW) 1 turn, then continue in with 1/4-turn increments until arm speed is maximum. Tighten jam nut.



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Clamp Force Indicator



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Priority Flow Control Cartridge

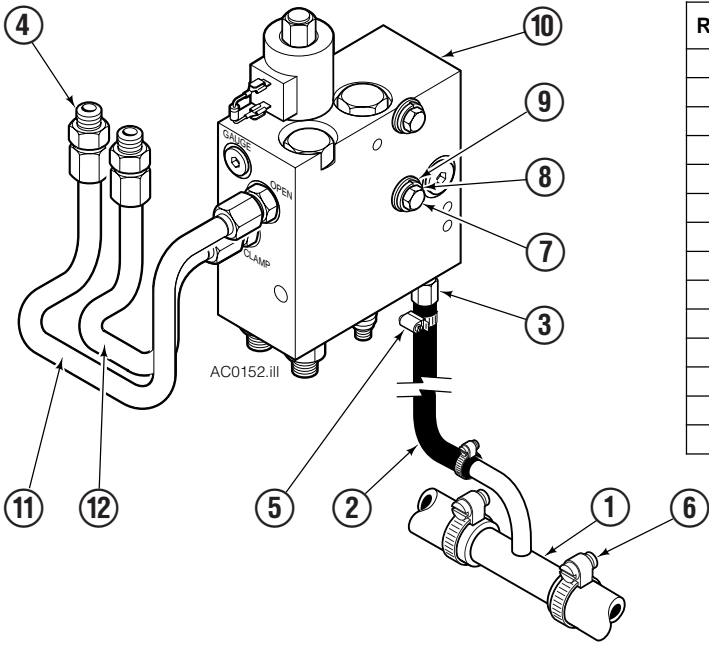
Adjust relief cartridges

- 15** Position a clamp-force indicator between the arms. (Use Cascade Clamp Force Indicator, Part No. 680072.)
- 16** Slowly clamp on the clamp-force indicator. Hold the lever in the CLAMP position and adjust the low-pressure relief (upper cartridge) to **1300 lbs. clamp force**. Press the solenoid button and adjust the high-pressure relief (lower cartridge) to **2500 lbs. clamp force**. Tighten jam nuts.



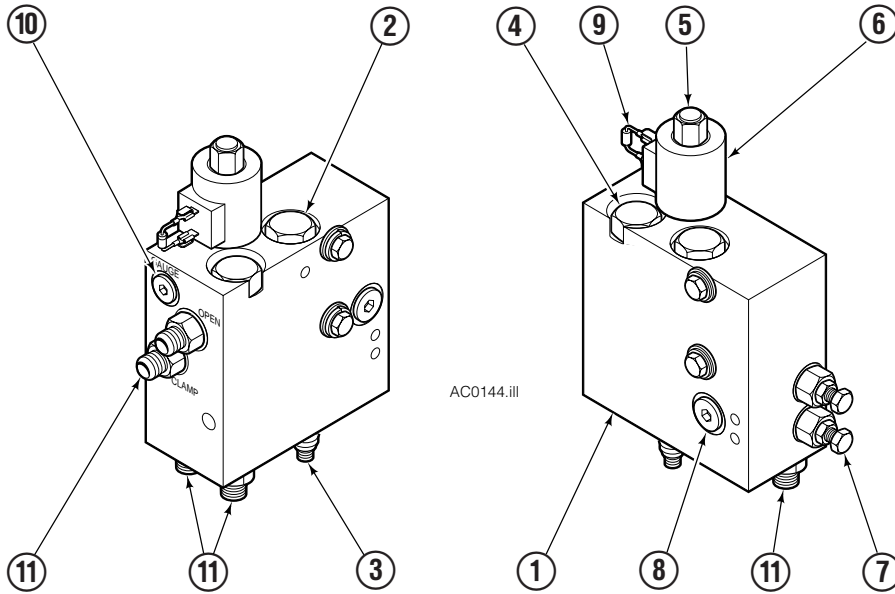
WARNING: After completing any service procedure, always test the Clamp through 5 complete cycles. First test empty, then test with a load to make sure the Clamp operates correctly before returning it to the job.

Relief Valve Kit



REF	QTY	PART NO.	DESCRIPTION
		221196	Relief Valve Kit
1	1	211739	Adapter Tee
2	1	211740	Hose
3	1	211741	Fitting, Push-Lok No. 8 JIC Female
4	2	2348	Fitting, 8-8
5	2	211743	Hose Clamp, No. 12
6	2	644581	Hose Clamp, No. 16
7	2	651845	Capscrew, 5/16-18 NC x 3-1/4 in.
7	2	3564	Capscrew, 1/4-20 NC x 3-1/4 in.
8	4	6229	Washer, 5/16 in.
9	2	6258	Lockwasher, 5/16 in.
10	1	220491	Valve Assembly
11	1	221197	Tube
12	1	221198	Tube

Valve Assembly



REF	QTY	PART NO.	DESCRIPTION
		220491	Valve Assembly
1	1	220492	Valve Body
2	1	224091	Logic Valve Cartridge
3	1	209049	Priority Flow Control Cartridge
4	1	221191	Check Valve Cartridge
5	1	221192	Solenoid Valve
6	1	221193	Coil-12 Volt
7	2	221194	Relief Valve Cartridge
8	1	602580	Plug, 8
9	1	669432	Diode Assembly
10	1	604510	Plug, 6
11	5	601377	Fitting, 8-8