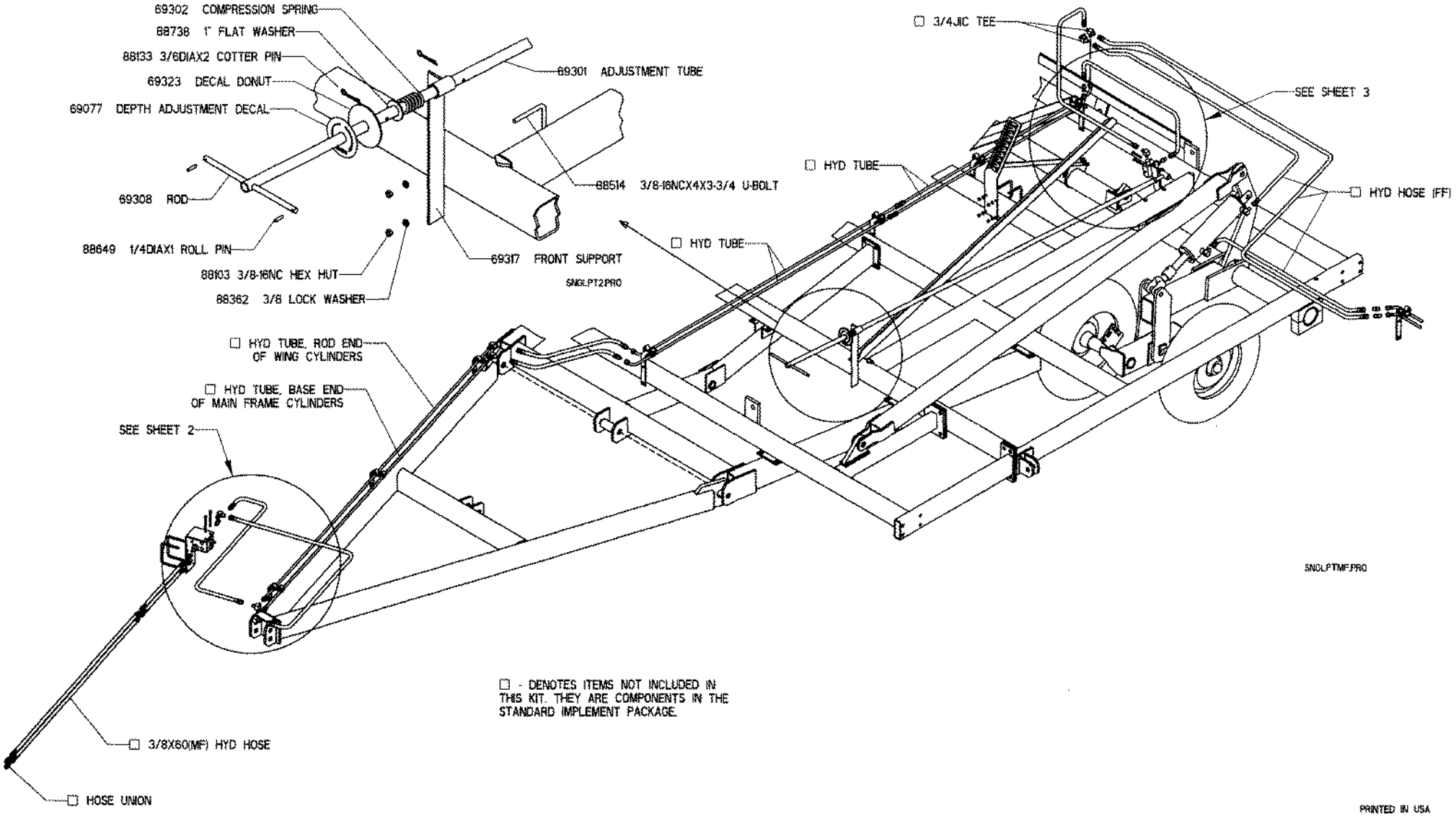
SINGLE POINT DEPTH CONTROL ASSEMBLY INSTRUCTIONS



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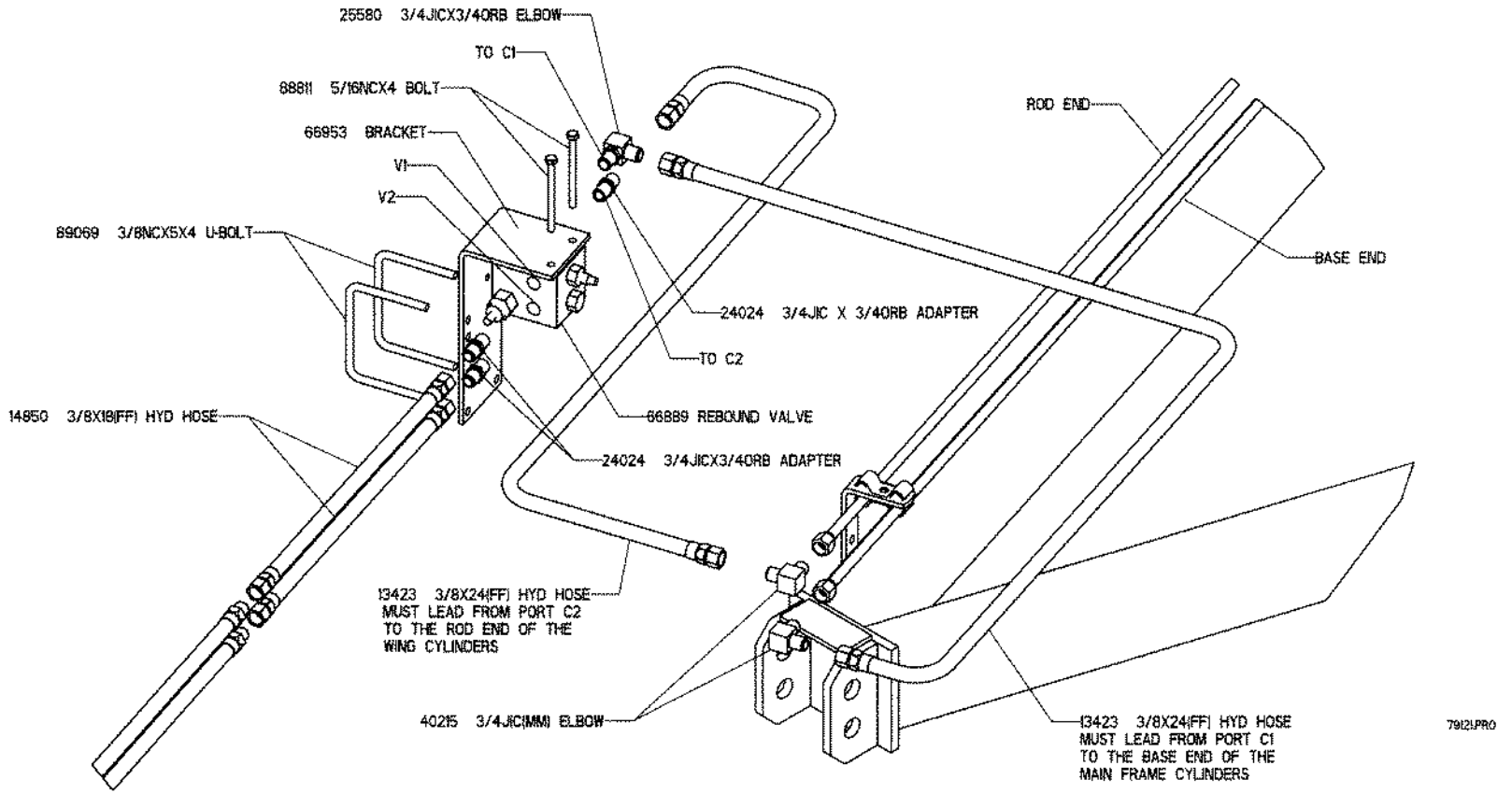

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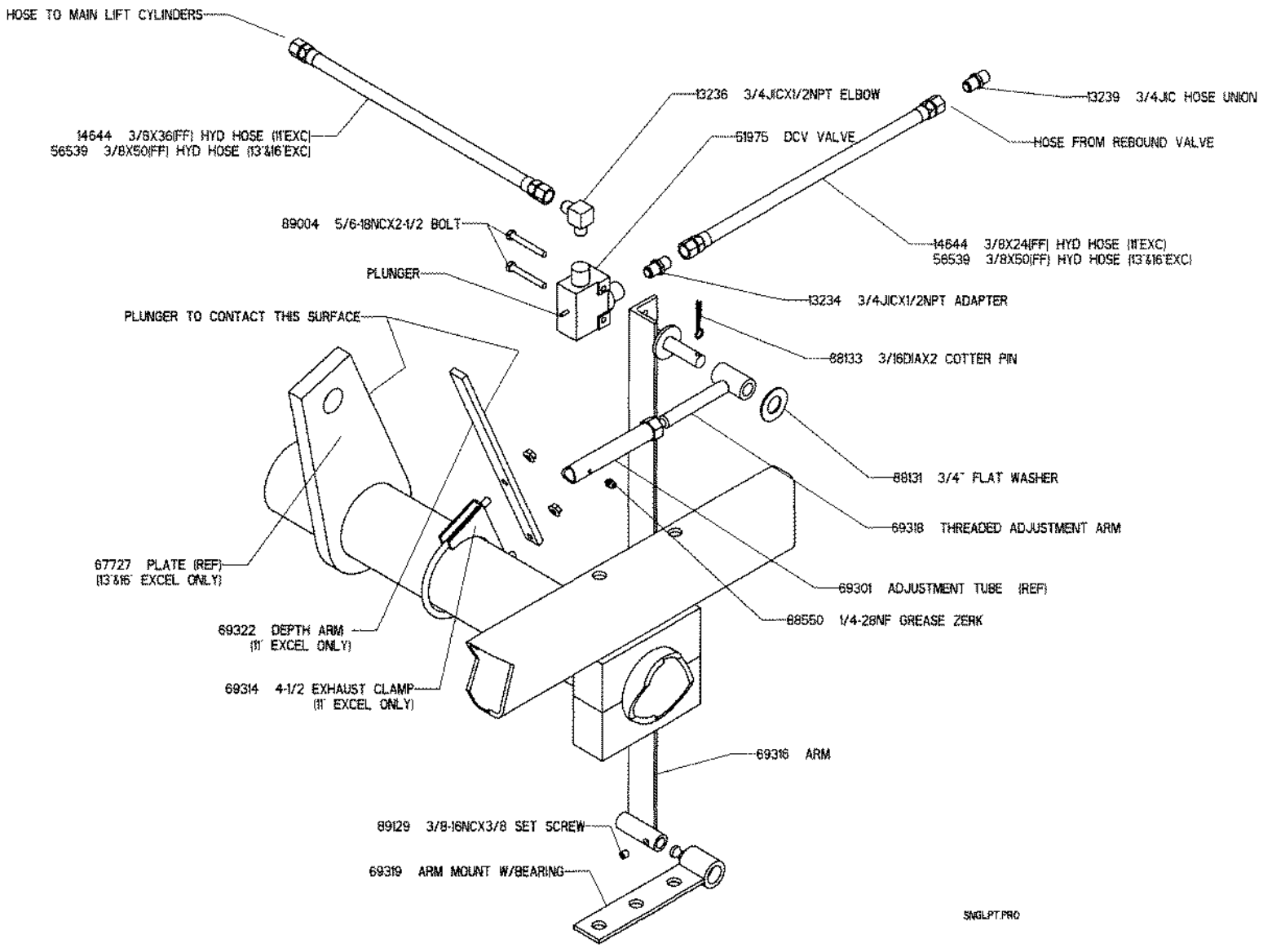

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eXcel Single Point Depth Control
Functional Information and Assembly / Operating Instructions

The eXcel field cultivator single point depth control is designed to allow the adjustment of the operating depth of the unit. The normal procedure involves use of adjustable screw stops on the hydraulic lift cylinders. The depth control valve is placed in the base circuit and functions as a shut off valve to contain the oil flow and hold the depth of the machine.

NOTE: use of the single point depth control will still require that the lift circuit be regularly purged to maintain the lift sequence. The reliability of the depth control is dependent on the containment of oil in the cylinders and circuit; this valve will not ensure proper function without the purging of the system.

The single point depth control consists of two parts – the rebound valve and the single point control valve. Each part performs a distinct function and work together to control the depth of the unit.

Rebound Valve

The rebound valve is mounted at the front of the eXcel hitch as shown on sheet 2. Position the mounting bracket to the side of the hitch, secure with the u-bolts and assemble the hydraulic fittings and hoses. **Make certain that the valve is tied to the main lift cylinder circuit and that the hoses are routed to the specified ports of the rebound valve. The valve will not function properly if it is incorrectly placed in the circuit.** Securely tighten all bolts and fittings once valve has been positioned.

The Rebound Valve addresses problems of air ingestion, uneven cylinder rod extension, and stability when using series cylinders in agricultural equipment. The manifold assembly cancels or dampens these problems through the use of three cartridges: (1) **counterbalance**, (2) **pressure reducing and relieving**, and (3) **check.**

- The **counterbalance** addresses *air ingestion* by preventing the implement's series cylinders from running ahead of the oil supply. This prevents a vacuum and air sucking past the rod seals into the cylinders. Since air is highly compressible and expandable, its presence causes spongy and unsynchronized cylinder movements. This cartridge is also a holding and relief cartridge and provides "On-The-Go" depth selection. The operator can manually select variable working depths on the go from the tractor cab. The new work depth will hold to 3000 psi before relieving.
- The **pressure reducing and relieving** addresses the effects of *compression* (3000 psi) which expands the hydraulic circuitry, and *de-compression* (zero psi) which returns the circuitry to a relaxed state. De-compression accumulatively transfers excess oil from the series into the last cylinder. An example of compression to de-compression occurs when the center section rises to work shallow and the wing section then ride above the surface. The reducing valve cancels these effects by maintaining a minimum 750-psi on the rod side of the last series cylinder, and bleeding off higher pressures at a restrictive rate of flow.
- The **check** adds *stability* by trapping the pressure of 750 psi established by the pressure reducing and relieving cartridge. Implement draft maintains this minimum pressure. The stiffened circuitry stabilizes implement frame and tools and can enable faster operating speeds.

Single Point Valve

Assembly - The single point control valve is mounted at the rear of the unit as shown on page 3. Mount the arm mount w/bearing to the bottom of the cast bearing cap. Attach the arm to the bearing and secure with the setscrew provided. Mount the DCV valve to the arm with the plunger to the front. Align the plunger with the axle plate on the 13' and 16" eXcel axle. On the 11' eXcel there is only a single plate located in the center of the axle. Mount the depth arm to the axle tube on the 11' axle as shown and position the depth arm to align with the DCV valve plunger. Align the contact surface of the depth arm with the back edge of the lift plate in the center and secure. Thread the threaded adjustment arm approximately 1" into the long adjustment tube. Secure the assembly to the arm with the flat washer and cotter pin. Screw the grease zerk into the adjustment tube and pump a liberal amount of grease into the tube to prevent thread seizing and repel water.

Connect the hoses to the depth valve and into the base side of the main lift circuit. Route the hoses around shanks or frame members and secure with tie straps. Insert the adjustment tube in the front support and mount the front support to the front of the second frame tube in the location shown with the u-bolt provided. Place cotter pin into the adjustment tube behind the front support, position the spring over the tube in front of the support and secure in position with flat washer and cotter pin. The plastic disk with the adjustment decal is slid on the tube and should rotate freely. Place the rod through the end of the adjustment tube and secure with the ¼" roll pins in each end.

Adjustments – the single point control valve is used to control the operating depth of the unit. As the unit is lowered into the ground the axle will rotate back. By positioning the depth control valve to contact the axle plate (13' & 16') or the depth arm (11') the valve will shut off the flow of oil and stop the axle rotation. Once the valve has been installed the adjustments will need to be made in the field. Level the complete unit is outlined in the eXcel assembly instructions. Adjust the depth stop collars on all the main lift cylinders to the clevis end of the rod. Cycle the hydraulic system to purge and lower the unit into the ground. As the decal notes each turn of the adjustment tube will adjust the depth of the unit approximately ¼", either up or down. Turn the adjustment tube clockwise to raise the unit or counterclockwise to lower the unit. Adjust as required to the desired operating depth.

The function of this depth control system is dependent on the containment of oil in the hydraulic cylinders and circuitry. The rebound valve described above is effective in maintaining a balanced and sequenced system but internal leaks can occur. As a safety measure once you have determined the maximum depth that you will be operating the unit you can adjust the main lift cylinders screw collars to maintain this maximum depth. Refer to the eXcel operating instructions for information on setting the lift cylinder depth collars. It may also be necessary to purge the hydraulic system occasionally to clean out air and stabilize the system.

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