



CWS INDUSTRIES (MFG) CORP.

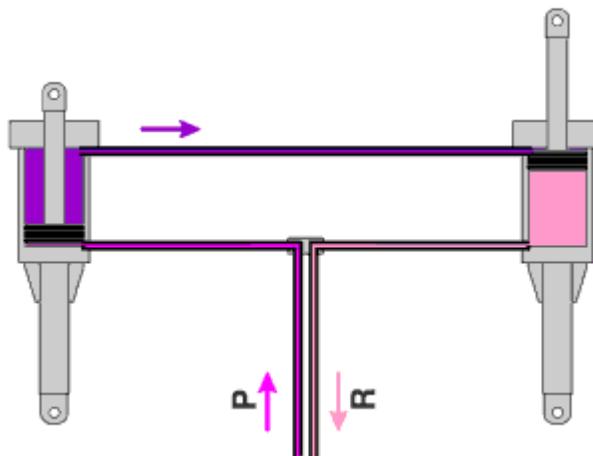
Plumbing Dual Tilt Cylinders

Dual Tilt Cylinders are made to replace Manual Tilt Struts that control the tilt function of Angle Dozers. They can not be connected to control tip or angle functions. See the Dozer Tilt Principles Explained page if you are unsure of the principles involved in making Dozers tilt.

Many mechanics become confused when connecting a set of Dual Tilt Cylinders. They seem to think it should be some sort of complex hydraulic circuit and as a consequence, we've seen a lot of strange hookups over the years. The following animated diagram shows just how simple it is.

**Plumbing Diagram
Dual Tilt Cylinders
for Angle Dozers**

**Animated GIF
Plumbing Dual Tilt Cylinders
for Angle Dozers**



**Simple Cylinder Hookup
Illustrates the Function of Dual Tilt Cylinders**

"P" and "R" are connected to the valve. When the valve is shifted, hose "P" provides oil to the tail end of the left cylinder. As the piston moves upward, it forces oil out of the rod end port to a hose that crosses the back of the blade to the rod end port of the right cylinder. Oil entering the right cylinder then forces the piston down and in turn, oil is forced out the tail end of the cylinder through hose "R" to the valve.

When the valve is shifted the opposite way, "R" becomes "P" and visa versa so that the process can be reversed.

A re-timing mechanism is built into Dual Tilt Cylinders to allow them to be resynchronized in case

they go out of phase with each other during use. Poppets in the piston, or bypass porting at the head end are common methods. At CWS we prefer the bypass method.



CWS Dual Tilt Cylinder Kits are available for retrofitting to common [Angle Dozers](#). Each kit consists of:

- 2 Heavy Duty Cylinders- to replace the standard manual struts
- 1 Hose - to connect the rod ends of the two cylinders together across the back of the blade
- 1 Junction Block - to mount on the back of the blade
- 2 Hoses - to connect the tail end of each cylinder to the junction block
- Guarding - which welds across the back of the blade to protect the hoses and junction block

Notes:

- Hoses for Dual Tilt Cylinders for Angle Dozers is usually lead through the inside of the tractor and out the Hard Nose (Radiator Guard). Plumbing along the c-frame on the outside of the tractor is not practical.
- It is the responsibility of the installer to supply hoses to jump from the center back of the blade to the hard nose of the tractor.