



KNOWLEDGE BASE

Article Type: **Instructions**

CPM Counterbalance Valve Adjustments

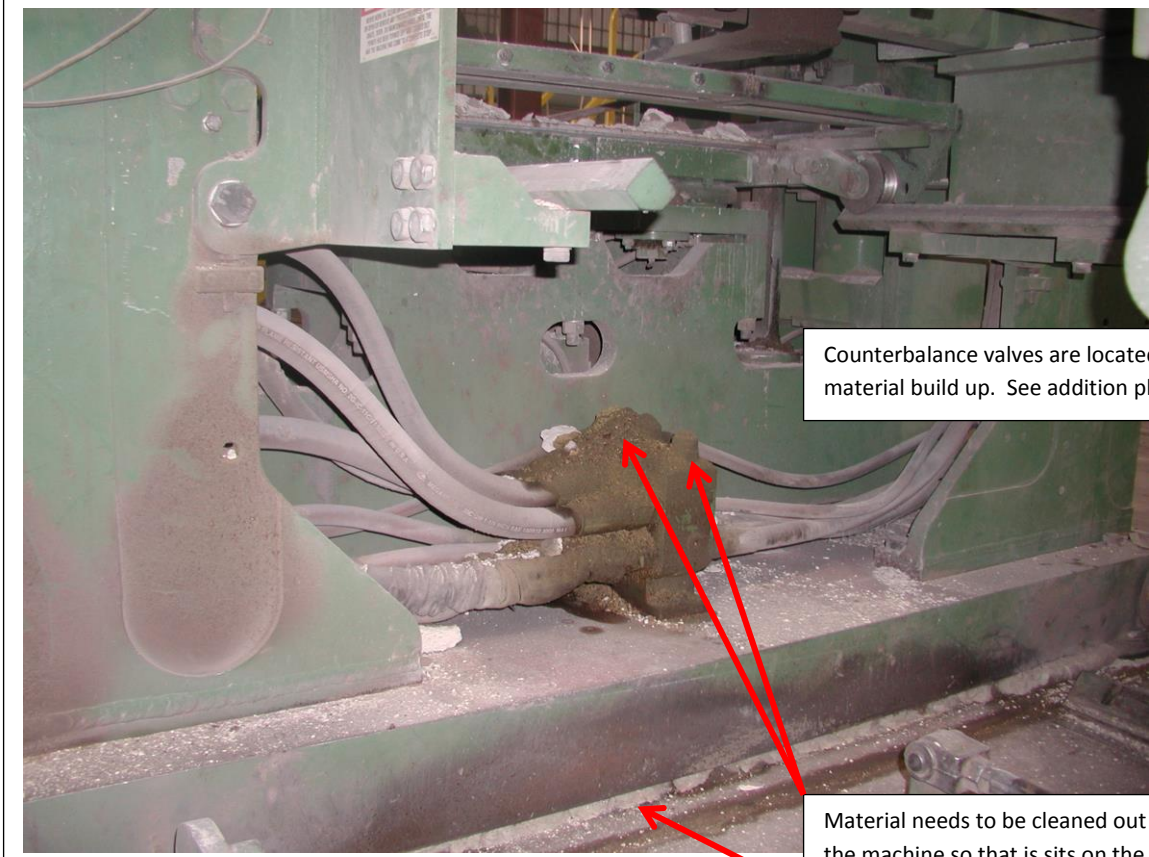
Description:

Instructions on “How to” properly setup and adjust the counterbalance valve On CPM machines; 30, 40, 50 and 60.

WARNING

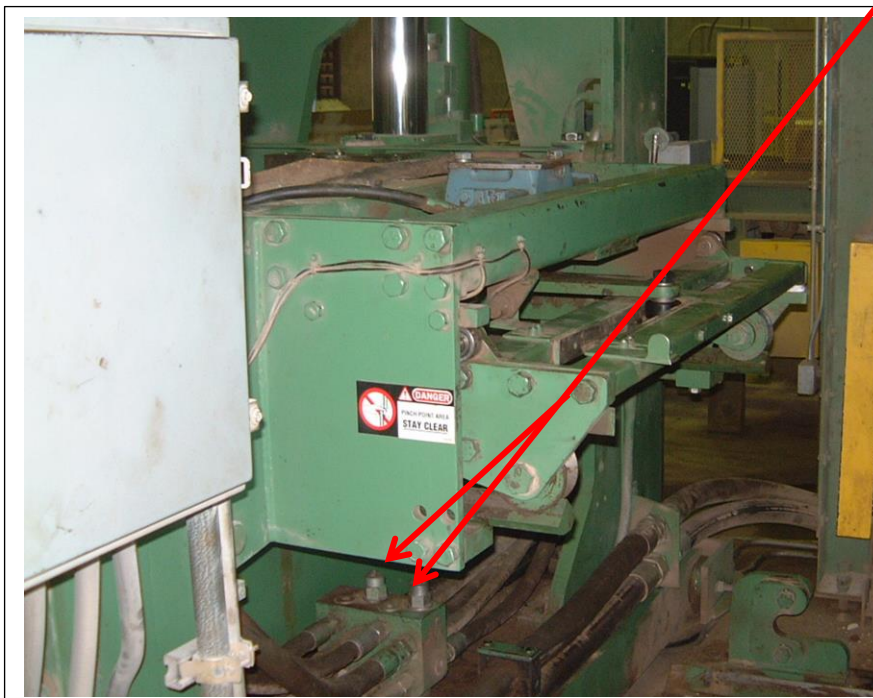
Never work on, clean or service this unit, control panel or any machine or open or remove any protective cover, guard, grate, door, or maintenance panel until the power or energy sources has been turned off, locked out / tagged out, and all moving parts have come to a complete stop and or blocked to prevent movement. Machinery is dangerous - avoid personal injury and or death by following manufacture, Local, and OSHA safety procedures. Contact Columbia Machine for safety decals, guards, horns and beacons.

CPM Counterbalance Valve Adjustments



Counterbalance valves are located under the material build up. See addition photo below.

Material needs to be cleaned out from under the machine so that it sits on the machine mounts and reduces excessive vibration to the machine components and product.



Prior to checking adjustments on counterbalance valve it is advised to check for cylinder bypass. With both beams in the down position turn pump off and following your safety lockout procedures lock out pump unit. With the pump locked out for checking the compression beam cylinders remove the bottom hoses on each side and attach a couple hoses long enough to attach to the base of the cylinders and secure in a bucket. Install 37 degree plugs in both the removed hoses from the compression hoses and lock down tight. Check all fittings making sure the machine is in the manual operation and all valve selector switches are in the natural position. After you have confirmed then unlock pumping unit and being careful start pumping unit checking for leaks before completing any tests. If you notice any leaks turn pump unit off and make needed repairs. Again if no leaks pump on select to energize compression valve "DOWN" This will put hydraulic oil to the rod side of the cylinders. If you notice a stream of oil out of the attached hoses on the base of the cylinders located in the bucket the cylinders are bypassing or if just once cylinder is bypassing oil then this cylinder needs to be repaired or you may want to consider rebuilding both or replacing both. After you have completed this test turn the pumping unit off and again following your lock out procedure lock out unit and remove the hoses and attached the machine base hoses back on the cylinder bases.

Following the same process for testing, but this time raise the compression beam to the up position and it may be necessary to block the beam so it do not drift down at this time. With the pump turned off and locked out remove the rod cylinder hoses on the compression beam cylinders and install the testing hoses securing them into a bucket. Once this has been completed and you have check all connections unlock and start the pumping unit and this time energize the compression valve "UP" and watch to see if oil is coming from either of the hoses. If you have a stream of oil coming out of the rod cap hoses on the piston seals are leaking in both directions and you need to rebuild or replace the cylinders.

Follow the same process for checking cylinder bypass on the stripper cylinders.

If cylinders are bypassing there is no reason to make counterbalance valve adjustments until either the cylinders are repaired or replaced.

Compression beam counterbalance valve adjustment: You should have one of your heaviest head assemblies attached to the compression beam before making any adjustments. With the beam in the up position pump on valve in the natural position wait for a few seconds to see if compression beam begin to drift down if so and it is very slight using you may be able to adjust the valve turning very slightly maybe 1/16 of a turn counterclockwise wait to see if beam begins to stop or continues down. If the beam continues down you may need to raise the beam again and continue with adjustments. If adjusting the valve counterclockwise does not stop the beam after one (1) full turn of small adjustments you may need to raise the beam and adjust the valve fully clockwise and the holding pressure is at less than 200 psi (14 bar). Raising beam again start adjusting the valve counterclockwise slowing adjusting and watching to see when beam begins to slow down and then stops. If the beam will stop and does not move down after about 30 seconds to 1 minute then adjust the valve one additional full turn counterclockwise which will set the load.

In the event that you cannot adjust the valve for either the compression beam or the stripper beam these may failed and will need to be replaced. Columbia Part # 350852 for counterbalance valves (VA,CART,CBIA-LIV)



3:1 pilot ratio, vented counterbalance valve

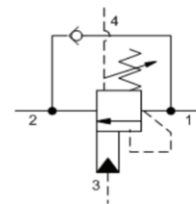
Capacity:
120 gpm (480 L/min.)

Functional Group:
Products : Cartridges : Counterbalance : 4-Port Vented : 3:1 Pilot Ratio

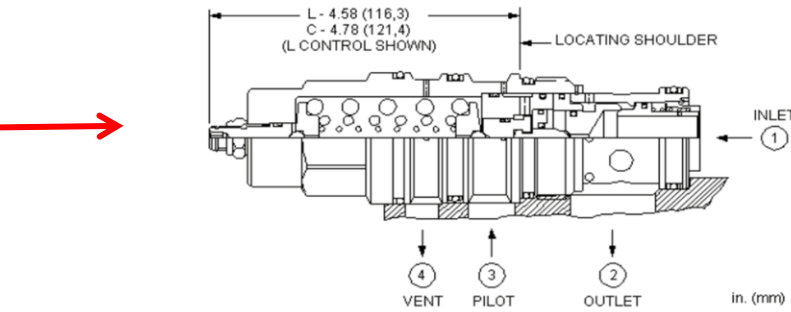
Model:
CWIA

Product Description

Vented counterbalance valves with pilot assist are meant to control an overrunning load. The check valve allows free flow from the directional valve (port 2) to the load (port 1) while a direct-acting, pilot-assisted relief valve controls flow from port 1 to port 2. Pilot assist at port 3 lowers the effective setting of the relief valve at a rate determined by the pilot ratio. Backpressure at port 2 does not affect the valve setting because the spring chamber references the vent (port 4).



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Technical Features

- Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.
- Turn adjustment clockwise to decrease setting and release load.
- Full clockwise setting is 0 psi (0 bar).
- All 4-port counterbalance, load control, and pilot-to-open check cartridges are physically interchangeable (i.e. same flow path, same cavity for a given frame size).
- Reseat exceeds 85% of set pressure when the valve is standard set. Settings lower than the standard set pressure may result in lower reseal percentages.
- Pressure at port 4 is added to the effective relief setting at a rate of 1 plus the pilot ratio times the pressure.
- Sun counterbalance cartridges can be installed directly into a cavity machined in an actuator housing for added protection and improved stiffness in the circuit.
- This valve has positive seals between all ports.
- With vented valves, a lower pilot ratio may be required to achieve machine stability compared to non-vented valves.
- Incorporates the Sun floating style construction to minimize the possibility of internal parts binding due to excessive installation torque and/or cavity/cartridge machining variations.

Technical Data

	U.S. Units	Metric Units
Cavity		T-24A
Capacity	120 gpm	480 L/min.
Pilot Ratio		3:1
Maximum Recommended Load Pressure at Maximum Setting	3075 psi	215 bar
Maximum Setting	4000 psi	280 bar

Conversion kit available: For specific conversion kits please Contact John Raff Columbia Machine parts
1-800-628-4065 ext. 391.

1. Cylinder upgrade kit, 382.XXXX.X
2. Kit Valve Stand, 382.XXXX.X
3. Hose kit 40/50, 382.XXXX.X

On CPM systems with the valve stand manifold with the counterbalance valves installed on the back side of the manifold or same side as the accumulators see photo below. You will notice each of these counterbalance valves have covers installed over the adjustment screw. These cartridges are pre-set the same at 1000 psi per our requirements. In the event you are experiencing either beam drifting down first you should check for possible cylinder bypass. Follow instructions above for checking cylinder bypass. For setting the counterbalance valves again follow the instructions above.

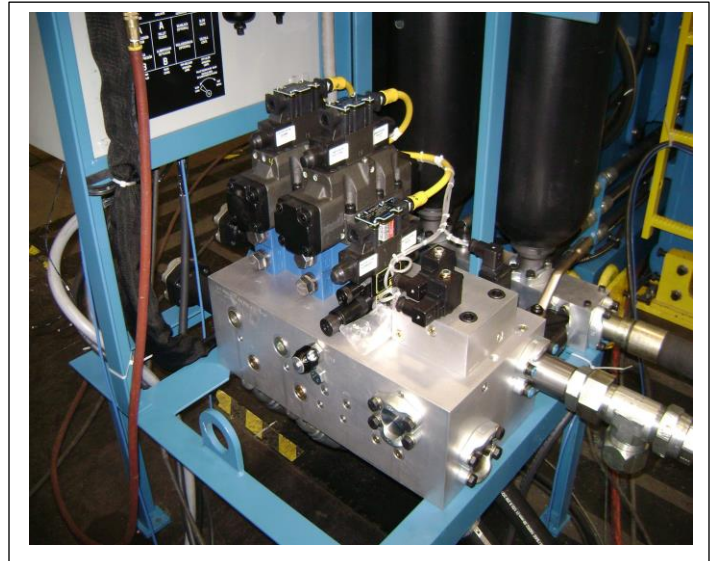
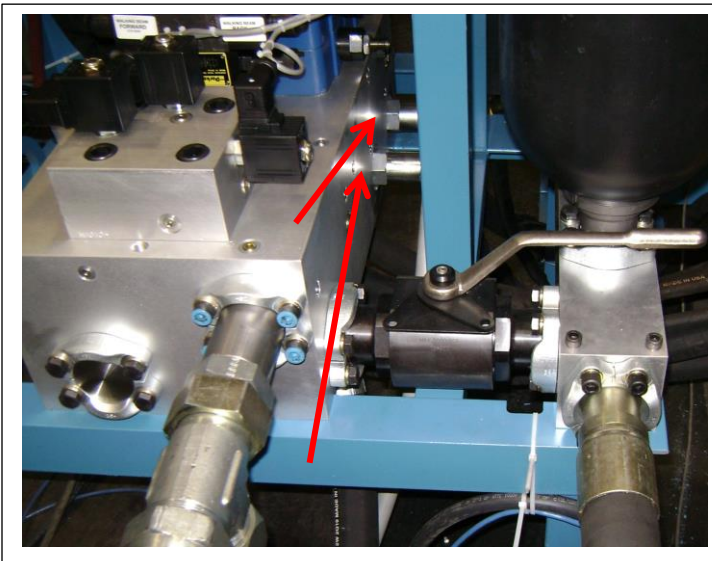
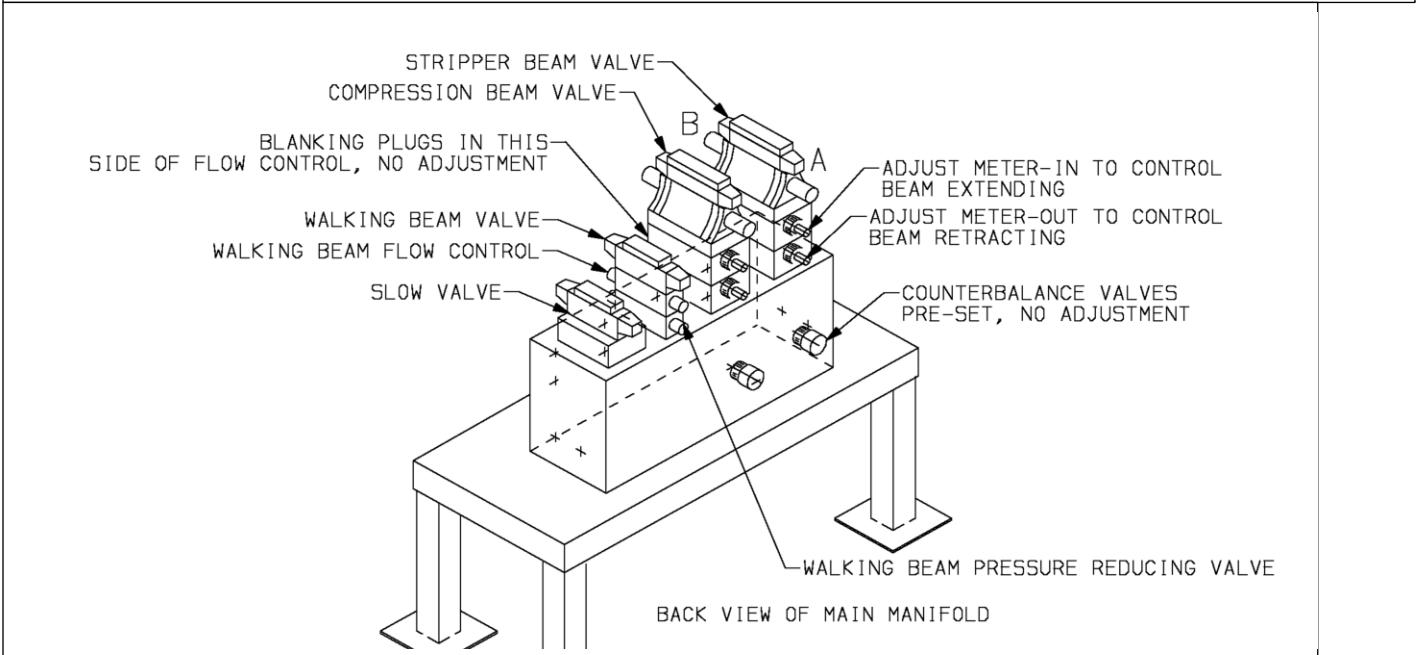
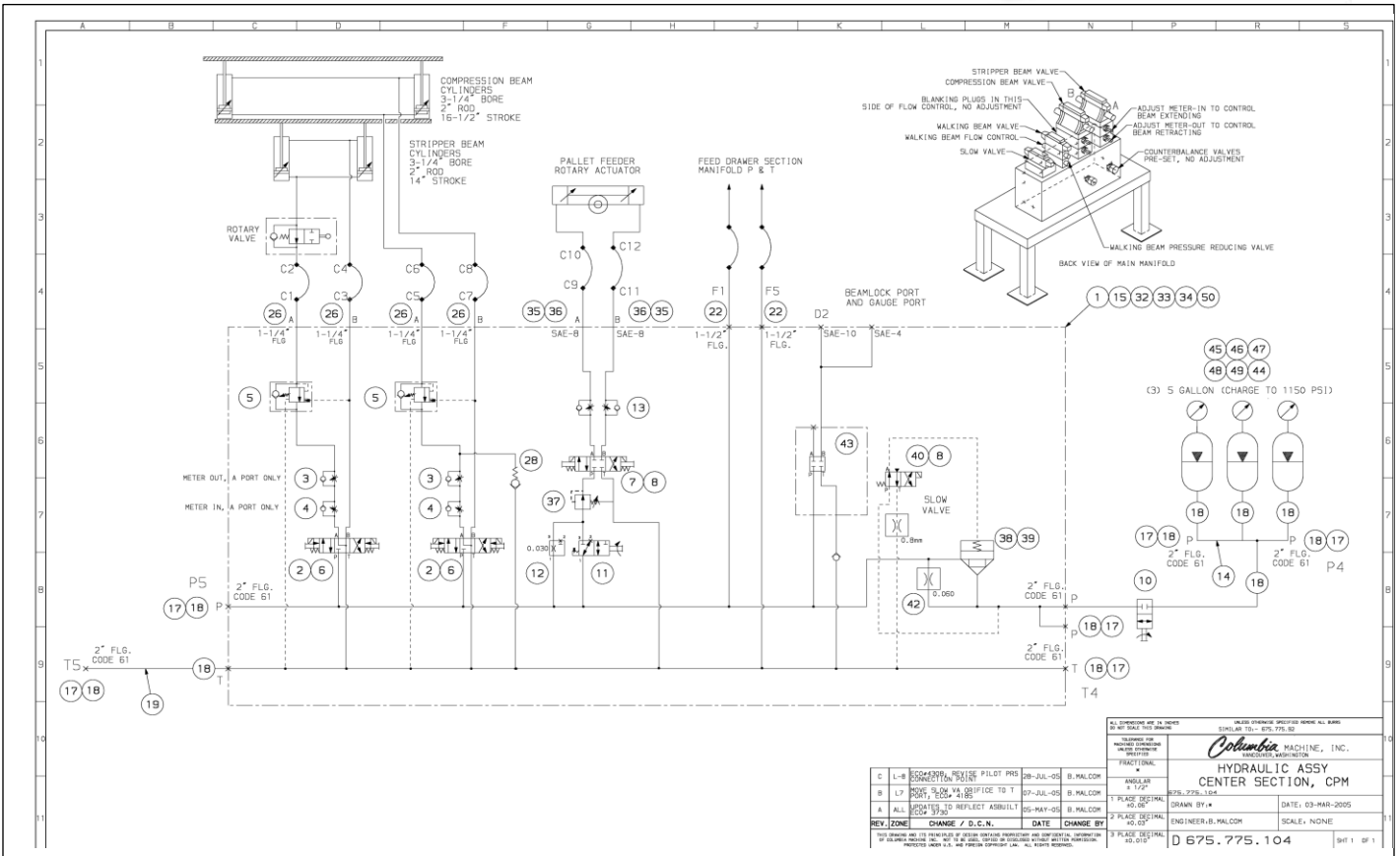


Photo above shows the counterbalance valves location. Hydraulic schematic on next page this is only use this drawing as a reference as there may be some differences on your specific machine. It is recommended to use the schematic from the parts manual. If you cannot locate or have questions please regarding adjustments or recommendation on the CPM contact Columbia Machine service listed on next page.



If you need additional assistance you can call Columbia Machine Service Department at 1-800-628-4065 and an operator will direct your call.