

## Using a Ten-Channel System

The Ten-Channel system may be used at several locations on larger sites with more than 10 injection wells. In such cases, consider where to stage multiple totes throughout the site so that they need to be moved only once and the amount of hose needed to connect wells to the system at each location is minimized. The tote weighs about 2,200 pounds and a forklift or pallet jack is required to move it. So, have a location for both skid and tote identified by the time that both arrive. You can easily move the injection skid later, but once the forklift is gone, the tote isn't going to move until it is empty. Larger sites may have Newman Zone delivered in tank trailers. The trailers might be located at a spot remote from the injection skid. In such a case, plan for the materials needed to connect the tank with the injection skid. Do not connect bulk tanks directly to the Ten-Channel system.

The system is mounted on an aluminum strut frame that has swiveling casters weighing approximately 300 pounds and is shipped on a plastic drum pallet. The frame can be removed from the pallet and wheeled around the site. Or it may be easiest to simply slide the skid on its pallet over uneven or soft ground. Hoses and fittings are shipped in a collapsible bulk container weighing about 560 pounds. Fittings are packed in two plastic tool boxes stacked on top of the hoses.

Position the system in a location that is convenient to the field crew. A second consideration is the location of the injection wells. Each system is shipped with 15 hoses 50' in length and ten 25' hoses. Try to locate the skid so that the supplied hoses will reach all of the wells.

Here, 5-gallon pails are the source of Newman Zone which will be fed to the skid through a 20' intake hose. They can be easily moved from the shipping point to the injection skid. However, if the volume of EVO is greater than about 1,500 pounds, packaging in a tote may be preferable.



Here are the contents of the two tool boxes shipped on top of the bulk container. Shown are ten digital flow meters, ten wellhead units, ten 1-1/2" x 1" reducing compression couplings and ten 1-1/2" x 2" reducing compression couplings. Not shown is the equipment used to freeze-proof the system for shipments during the winter months.



Install the reducing compression coupling on the well casing and tighten with two strap wrenches. The compression coupling that adapts our 1-1/2" wellhead fitting to 2" well casing is shown.



Install the wellhead fitting into the reducing compression coupling and tighten with two strap wrenches. Then attach the digital flow meter to the wellhead fitting. The digital flow meter provides both total flow and flow rate. At low flows (< 0.5 gmp), the meter stops. The mechanical flow meters mounted on the injection skid will continue to provide an accurate measure of total flow and flow rates can be estimated by timing the movement of the sweep hand.



Attach a 50' hose to one of the ten mechanical flow meters on the injection skid.



Roll out a 50' hose and attach to the digital flow meter at the well.



Continue to connect the other wells in the same manner. When it comes to hose length, sometimes you get lucky and sometimes you don't.



All of our hoses are female/female. We have provided a male/male connector with every 25' and 50' hose to allow you to connect them as needed.



Running the vinyl hoses by pulling one end from the coil create tripping hazards and kinks that restrict flow. If you leave twists in the hose, it will try to "overlay" coils acquired on site with those acquired during manufacture and be much more difficult to re-coil for return shipping. The preferred method is to unroll each coil. After re-coiling literally miles of vinyl hose in both cold and hot temperatures, we know that this method will save time, energy, and frustration in the long run.



Ten wells connected to the injection skid.



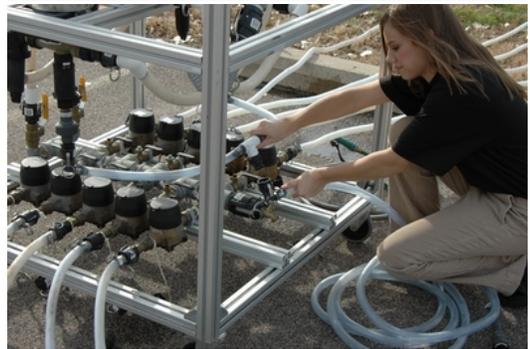
The Dosmatic™ A30-5% feeder can be adjusted to a feed ratio between 0.5% and 5%. Remove the anti-rotation pin from the outer cylinder and turn the outer cylinder by hand. Adjust the outer cylinder until the desired proportion indicated by the scale on the inner cylinder lines up with the top edge of the outer cylinder. The scale is on a flat milled on the inner cylinder; it should line up with the housing for the anti-rotation pin when adjustment is complete. Then replace the anti-rotation pin.



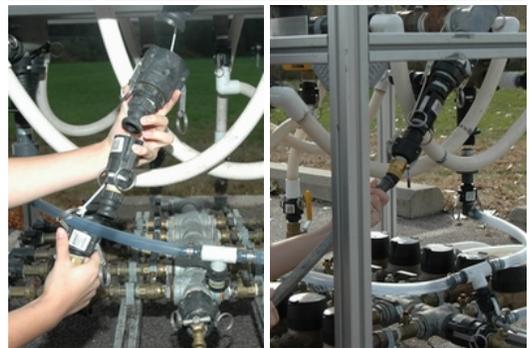
The Dosmatic™ A20-10% feeder can be adjusted to a feed ratio between 1% and 10%. Remove the anti-rotation pin and turn the inner cylinder with a smooth-jawed wrench (1-1/2" cap.). Adjust the inner cylinder until the desired proportion indicated by the scale on the inner cylinder lines up with the bottom edge of the outer cylinder. The scale is on a flat milled on the inner cylinder; it should line up with the holes for the anti-rotation pin when adjustment is complete. Then replace the anti-rotation pin.



Place the screen end of the amendment hose in the source pail or tote of Newman Zone. Attach the other end to the Y-hose that connects the two Dosmatic™ feeders. Fluid pressure in the three hoses will fluctuate, perhaps enough to "pump" the amendment hose out of the pail or tote. Restrain this motion with tape, cord, or bungees. Also be aware that this same motion can upset partially emptied pails.



The end of the water supply assembly includes a stack of fittings that allows you to use either a 1-1/2" female camlock, 1" female camlock, 3/4" female camlock, or 3/4" male garden hose on the end of your water supply line.



Add a shut-off valve at the end of the water supply line if you will be moving the injection skid from place to place on the site or if the water source is remote from the injection skid.



The feeders are driven by the pressure of the water supply and need approximately 5 to 10 psi of water pressure to operate. The throttling valve should be shut before the water supply line is charged with pressurized water. The backflow preventer can be bypassed if the water supply pressure is too low by using the bypass adapter provided with the system.

Flow rate can be adjusted at the wellhead by using the throttling valve in conjunction with the pressure gauge and the digital flow meter. The purge valve is used to vent air from the well casing after injection has begun. We recommend a maximum pressure of 20 psi as the couplings slip off of new pipe at 30 psi. Because the connected wells are resistances in parallel, you may need to adjust the ten wells iteratively several times to balance flow rates.

