

TECHNICAL NOTE 09-01
WATER RESTRAINT SYSTEM (WRS)
Adjustment of Nozzle Valve Kinetrol Unit

Dated: May 29, 2001

Introduction

The nozzle valve is located at the end of the nozzle. Mis-adjustment of the nozzle meaning that the valve does not open fully and/or a smooth bore is not present from the nozzle through the nozzle valve, the spray column and therefore the cannon shooting distance will be affected. This procedure should be followed to ensure that the nozzle valve is properly adjusted and operating correctly. Note: Always shoot the nozzle and check the nozzle valve timing before making this adjustment so you can see that the valve is opening properly and what type of adjustment is needed if any.

Discussion

The nozzle valve is an air operated Kinetrol valve. The valve is essentially a ball valve with an air-operated diaphragm. Air is used to push the valve open and also to push the valve closed. There are two air lines going to the valve. The line that closes the valve is normally energized providing an air pressure of about 6 bar (80 psi) onto the diaphragm holding the valve closed. When the nozzle valve is activated, the air line holding the valve closed is vented to atmospheric pressure by the electrically controlled solenoid valve located near the large valve and the same air pressure is applied to the other side of the diaphragm causing the valve to open. The valve position at full open is the most critical adjustment and should always be tested. The closed adjustment normally needs no adjustment.

Procedure

1. Looking down on the top of the kinetrol valve while looking from the nozzle barrel, there are two air lines and two screw adjustments with locking nuts. Viewed from this position the air line on the right and the adjusting screw on the left controls the open position. The air line on the left and the adjusting screw on the right controls the closed position.
2. While the system is on but not shooting, there is air pressure on the air line on the left holding the valve closed.
3. To open the valve for testing and adjusting momentarily disconnect the air line on the right (no air pressure at the time). Then disconnect the air line on the left (which has air pressure) and move it to the right side causing the valve to open.
4. The air pressure will drive the valve open and allow you to see the open position.
5. Carefully using your finger or a sharp device, feel the barrel through the valve and verify that it is smooth and is not causing any interruptions in flow. A difference of as little as 1/64" from full opening can cause a disruption in the water stream and affect the shooting distance. Opening too far will also cause the same type of flow disruption.

6. While the valve is being held open by the air, loosen the left adjusting screw nut and using a screwdriver adjust the screw to where the valve is exactly fully open. Do not adjust to open past the full position so you can feel no discontinuity in the valve barrel.
7. Lock the adjustment in place and replace the air lines in the correct position.
8. Test fire the system at a considerable distance (80-100 feet) to verify that the nozzle valve is correctly adjusted and the water stream is not fogging at the edges.
9. If there are any problems please contact our office.

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