



This is daisy chained to the other 8/16 board

These 8/16's are high speed boards. The first 2 8/16's are removed from the first module group. Make sure to set the dipswitches the same as the boards which are removed.

Putting Flow meters on a CBW

OBJECTIVE: The purpose of this action is to install flow meters on a CBW so the water used can be metered to make sure the tunnel is running at top efficiency.

CAUTION: The people performing this retrofit must first be familiar with MILNOR CBWs and their operation. All safety precautions should be observed when working on the tunnel. The power and the water supply must be turned off during this process.

Parts shipped for enhancement:

08BNDFST	Flow sensor board	qty(2)
08BS816BHT	High Speed 8/16 Board	qty(2)
30F515	Flow sensor	qty(2)
30F516	Insert for Saddle	qty(2)
5R3A1ECI	Saddle for pipe	qty(2)
08PSS3401T	40 Watt Power Supply	qty(2)
03 B0102	Terminal 6 Position	qty(2)
15N101	Stand off	qty(12)

These quantities are if two flow meters are sent. If there is only one flow meter sent the these quantities will be half of the shown quantity.

Tools needed:

Drill motor
1 1/2" hole bit
MTA gun
Wire Crimper
Wire Stripper

Procedure:

- 1) Turn water off and lock out the power to the tunnel
- 2) Locate place to put flow sensor on in coming water line. The flow sensor has requirements in order for it to work properly. The flow sensor must be 20i.d.'s (internal pipe diameters) downstream from a bend, and 5i.d.'s upstream from anything such as a bend, flange or orifice. Try to use the same method to stay away from flanges and reducers. This eliminates turbulence in the line that would cause interference in the sensor. With 0 degrees being the top side of the pipe mount the sensor at 45 degrees. This is important because there may be air in the water pipe and this would also interfere with the sensor.

Example: 3" pipe to get 20i.d.'s 3"X20 = 60"

- 3) Drill 1 1/2" hole in the pipe at determined position.
- 4) Attach saddle to pipe. Secure the saddle tightly to the pipe.
- 5) Place the flow sensor into the saddle. There is an arrow embossed on the top of the flow sensor and this should point in the direction of the flow. Wiggle the flow sensor into place. **DO NOT BE ROUGH WITH FLOW SENSOR IT WILL DAMAGE IT.** Tighten the bezel on the flow sensor to secure it to the saddle. Make sure the arrow on the sensor continues to point in the direction of the flow. **DO NOT USE TOOLS TO TIGHTEN FLOW SENSOR, TIGHTEN BY HAND.** Tools will damage the sensor.
- 6) The sensors should be attached to the headers (one on each header). The cable from the sensor needs to be run to the machine into the first control box (the control box closest to the load end of the machine). Secure the cables so they do not hang and are not in the way of anything.
- 7) The first two 8/16 boards must be removed and replaced with high speed 8/16 boards. The dipswitch settings will be the same for the new boards. Please make a note of the settings when removing the boards, the position may be of some benefit later also so make a note of this also. Example: Board 1 has switch 1 and 5 on and the rest off and this board was in the far left side of the card cage.
- 8) Make sure the MTA plugs are placed on the new boards in the same location as they were on the old boards.
- 9) There are pre-drilled holes in the side of the card cage (the card cage were the two boards are removed). There is hole patterns were the stand-offs can be used to mount the flow sensor boards.
- 10) Connect boards in the way shown on the attached drawing
- 11) Calibrate flow meters using instructions given for task.

The piping used in this machine is a special piping called Victaulic. There is a special drill for drilling holes in this style of piping. This drill attaches to the pipe and ensures a straight, level hole. This drill may be rented locally. This drill is not completely necessary as a standard drill will work if the operator is steady.

There are some MTA's, with wires already plugged in with butt-ons, sent with this instruction. These are for the flow sensor board so a proper connection can be made.