



Calibration V100 R100

First, realize that you have two instruments...a positioner and a feedback module. While designed to work and mount together, they effectively need to be calibrated procedurally. You will need a meter that generates a 24 VDC power and able to generate (positioner) and read (feedback) 4/20 mA. To be able to stroke the valve/actuator and read the feedback you will need two meters.

First we need to make sure that the positioner and valve/actuator are working well and properly calibrated. You may already “know” this but don’t assume they are.

Go ahead and remove the R100 feedback module. With the R100 cover removed, there are three screws that secure this housing to the V100. There is probably cables already to the R100-just have Eddie remove the 3 screws and lift the box away from the V100. It will be best for him to have his input signal at 4 mA when he removes the R100, so we at least know where we were when it was removed.

Once the R100 is removed, stroke the valve from 4-20 mA (0-100%) (This is where he may want to disconnect existing wiring and use local generator....) to make sure, as best you can (guess valve is in the line) that the package is responding to the various stages of the 4-20 mA input. If you are dealing with a soft seated butterfly valve, you have a bit of internal break away, that you have to overcome with the disc and seat interference. If you have a full set of gauges on the positioner, this will aid a great deal in the calibration process. If you need to make a positioner zero adjustment or even span adjustment, these are very simple and covered on page 11 of the attached manual or page 10 of the small manual that was shipped with the product. Once you are comfortable that the positioner-actuator-valve are responding to proper input signal, we can now re-mount the feedback module. Return the valve package to 4 mA position.

Go ahead if he has disconnected positioner input wiring, have him re-connect these wires before he re-installs the R100. He will then need someone from the

control room to “work with” when he again needs to stroke the valve.....this will be after we get the R100 calibrated.



If possible, go through a pre-calibration of the R100 before it was mounted to the positioner, since this is more difficult in the field, re-mount the R100 back on the V100.....the 3 screws should be tightened, and the female shaft of the R100 should fit securely to the male shaft of the positioner. If necessary, there is a screwdriver slot on top of the feedback shaft that he can turn to hear/feel the two shafts “snap” together.

If you are going to do a pre-cal of the R100 install small leads in the R100 terminal block, and connect your meter and set the meter to read 4/20 mA. You will initially get some mA signa

it may be anything, but probably won't be 4 mA-which is where we want to get to. If you are getting a bunch of EEEs (or just -----s) on your meter, the pot isn't even in the right quadrant. These are factory calibrated for 90 degree, with the jumpers (page 6 of R100 manual) set for 90 degrees...but if we (or someone else) have rotated this to say 120 degree, we are out of the 90 degree quadrant...that's OK-we will bring it back in next.

There is a small gearwheel for the pot and large gearwheel for the feedback shaft. There is a small wire that is actually a spring that holds the pot wheel tight to the larger wheel. Pull the small wheel away from the large wheel, you have about a ¼” of movement there. Take a small screwdriver and turn the pot wheel, while it is pulled away from the large wheel. Your meter should change.....??? It is pretty sensitive. Try to stop the turning as close to 4 mA as possible....this means we are pre-calibrated, to at least close to 4 mA. Anywhere between 3.5 -4.5 is good...we can trim out the rest. Once you are in this range, release the small wheel and let it mate to the large wheel.

On the small transmitter board are trim pots-zero and span. Trim the zero so that you are on 4 mA. Then stroke the valve (control room) up to full open or 20 mA. Check the meter and adjust the span so that he gets 20 mA on meter-go back to

4 mA and double check the zero....this may be needed back and forth a couple of times to get it set. If you check the mid stroke (12 mA) you WILL find some non linearity. The positioner has a published spec of <0.7%, the feedback is <1.5%... then you have some measure of non linearity in the actuator. But we can get it to where you at least get comparable readings at say 4.5 mA input and close to 4.5 mA output.....and much more linearity than you are currently getting.