

CLEANING AND, POLISHING OF CYANIDE ION SELECTIVE SENSORS

WHEN THE SENSOR RESPONSE BECOMES SLUGGISH OR PERFORMING A CALIBRATION BECOMES DIFFICULT THE SENSOR MAY BE CONTAMINATED OR ATTACKED BY SOME OF THE COMPONENTS IN THE SAMPLE (THE CYANIDE MEASUREMENT IS PERFORMED THROUGH DISSOLVING A SMALL PART OF THE CRYSTAL). REMOVE THE SENSOR FROM THE EQUIPMENT AND VISUALLY INSPECT IT. IF THE SENSOR'S SENSING MEMBRANE (THE CENTER PIECE AT THE FRONT OF THE SENSOR) IS DULL IN PART IN WHOLE, IS RECESSED INTO THE BLACK BODY, IT NEEDS REPOLISHING. IF THERE IS ONLY A DEPOSIT OF ORGANIC NATURE AND IS SOLUBLE IN ISOPROPYL ALCOHOL TRY TO REMOVE BY RUBBING WITH A TISSUE SOAKED IN THE ALCOHOL FIRST. IF THE SENSOR'S SENSING MEMBRANE REGAINS ITS SHINY STATE REINSERT SENSOR AND RECALIBRATE THE EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS. IF THE SENSOR HAS BEEN CONTAMINATED AND THE CONTAMINATION CAN NOT BE REMOVED AS DESCRIBED ABOVE, OR THE SENSING MEMBRANE HAS BECOME DULL OR RECESSED INTO THE BLACK BODY, THE SENSOR NEEDS REGRINDING AND POLISHING. THE SENSING MEMBRANE IS ONLY ABOUT 0.25 OF AN INCH THICK, SO GRIND MINIMUM AMOUNT FOR A LONGER LIFETIME.

POLISHING

- B. USE THE SUPPLIED OR ANY "WET OR DRY 600 GRIT SILICON CARBIDE" POLISHING PAPER OR CLOTH FOR GRINDING. PLACE THE POLISHING PAPER ON A SMOOTH SURFACE, LIKE THE POLISHING BLOCK PROVIDED, MAKE SURE THE SURFACE IS PARTICULATE MATTER FREE. WET THE POLISHING SURFACE WITH HIGH PURITY D.I. WATER, HOLD THE SENSOR PERPENDICULAR TO THE SURFACE OF THE POLISHING PAPER TO THE MIDDLE OF THE WETTED SURFACE. ROTATE THE SENSOR COUNTERCLOCKWISE (CLOCKWISE IF LEFT HANDED) WHILE PRESSING FIRMLY AGAINST THE SURFACE ON AN INCREASING CIRCLE TO ABOUT A 1" TO 2" DIAMETER. THIS MOTION WILL PARTIALLY BREAK DOWN THE SURFACE OF THE POLISHING PAPER AND WILL ROUGH GRIND THE SENSOR. REPEAT THE ROTATION IN REVERSE BY REDUCING THE CIRCLE. NOW THE BROKEN DOWN POLISHING SURFACE WILL PREPOLISH THE SENSOR SURFACE. AFTER THIS PROCEDURE THE SENSOR SURFACE SHOULD BE UNIFORMLY DULL, SHOWING SMALL SCRATCHES; IF NOT REPEAT PROCEDURE, ROTATE SENSOR 180 DEGREES IN YOUR HAND. WASH HANDS AND EQUIPMENT AND RINSE SENSOR IN D.I. WATER.
- C. REMOVE THE BACKING OF THE POLISHING CLOTH. ADHERE IT TO A SMOOTH PARTICULATE MATTER FREE SURFACE, OR USE THE PLASTIC BLOCK PROVIDED (THERE IS ALREADY A CLOTH ON ONE SURFACE). WET THE SURFACE OF THE CLOTH WITH D.I. WATER.

ADD APPROXIMATELY 0.1 GRAM OF THE SUPPLIED 1.0 MICRON ALUMINUM OXIDE POLISHING POWDER (WHITE POWDER IN A PLASTIC TUBE). USE THE SAME TECHNIQUE AND MOTIONS FOR POLISHING AS DESCRIBED IN THE GRINDING SECTION, STARTING IN THE MIDDLE OF THE ALUMINUM OXIDE POOL.

CHECK THE SURFACE AFTER ABOUT SIX TO TEN CIRCLES, IF NOT SHINY AND SCRATCH FREE TO THE NAKED EYE, REPEAT THE PROCEDURE. ROTATE THE SENSOR 180 DEGREES IN YOUR HAND AFTER EACH CHECKING, THIS WILL PROVIDE MORE UNIFORM SURFACE.

WASH HANDS AND EQUIPMENT, RINSE SENSOR IN D.I. WATER. CONDITION THE SENSOR FOR ABOUT 30 MINUTES IN THE CALIBRATION SOLUTION OF THE LOWER CONCENTRATION AND RECALIBRATE THE EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.

IF THE POLISHING CLOTH IS CLEANED AND STORED CLEAN IT CAN BE REPEATEDLY USED, IF BROKEN DOWN, REPLACE WITH NEW ONE.

NOTE: CYANIDE SOLUTIONS IN THE PPM RANGE WILL DISSOLVE THE SENSING MEMBRANE FAIRLY FAST AND IT WILL LOOK DULL AFTER A FEW HOURS. IN SUCH A CASE THE POLISHING STEP MAY BE OMITTED.