TUNING ADJUSTMENT
CAUTION: USE PLASTIC
TOOL SUPPLIED ONLY

SHOWN IN HI LEVEL
FAILSAFE POSITION [HLFS]

SHOWN IN LO LEVEL
FAILSAFE POSITION [LLFS]

PROBE CABLE CENTER WIRE
PROBE CABLE SHIELD CONNECTION
GROUND WIRE CONNECTION
1. Visually check the cable connections at the probe and instrument and compare to the wiring diagram. It is a common error to ground the Cote Shield (tm).

2. Disconnect cables from Probe, Cote Shield and Ground terminals of the instrument. Leave cable connected to the probe. Connect a .01 if or larger capacitor in series with a VOM set to a low voltage AC range (eg. 6 VAC range) (see drawing).

3. With power applied to instrument measure the voltage from probe to ground and Cote Shield (tm) to ground. Record these values.

   Voltage to Ground
   Cote Shield to Ground

   The meter should read between 1 and 3 volts.

4. Reconnect cable to the correct terminals re-measure these voltages with level below the probe.

   Voltage Probe to Ground
   Cote Shield to Ground

   the voltages should be within 5% of the readings obtained in step 3.

5. Remeasure the voltage with the level above the probe.

   Voltage Probe to Ground
   Cote Shield to Ground

   Again the voltages should be within 5% of the readings obtained in step 3.

6. If the above steps worked out correctly the probe should be working correctly if not proceed to step 7 and then contact the factory for assistance.

7. Disconnect the cable at the probe. With an ohmmeter measure across the probe terminals for the following values:

   LEVEL BELOW PROBE

   DISCONNECT PROBE / COTE SHIELD CABLES LEAVE GROUND CONNECTED

   Resistance Probe to Cote Shield
   Resistance Cote Shield to Ground
   Resistance Probe to Ground

   LEVEL ABOVE PROBE

   DISCONNECT PROBE / COTE SHIELD CABLES LEAVE GROUND CONNECTED

   Resistance Probe to Cote Shield
   Resistance Cote Shield to Ground
   Resistance Probe to Ground
1. Disconnect measure cable from probe, Cote Shield, and ground terminals at the instrument, leave power connected to terminals 2 and 3.

2. Connect a capacitor, any value from 10 to 50 pf (mmf) across Probe and ground terminals (see drawing).

3. Starting with the adjustment in the extreme counter-clockwise position turn the insulated tuning wrench clockwise until the relay operates.

4. Rotate the adjustment back and forth about this point observing the travel of the pointer between relay Pull in and relay drop out.

   The pointer should travel less than 1/8 turn to operate relay; if so the instrument is working properly. Proceed to "Probe Checkout", 3 wire cable checkout, and "Relay Circuit Checkout" Procedures.

5. If instrument does not function consult factory for assistance.
The relay circuit consists of one or more sets of single pole double throw relay contacts brought out to a terminal strip.

Tune the instrument as described in the instrument check out procedure use one of the methods shown to determine if relay contacts are switching.

Difficulty in calibration can often be traced to improper wiring of the relay terminals to an annunciator or other panel device. Check the wiring against the wiring diagram in the instruction manual. BE SURE TO USE DIAGRAM FOR THE FALL SAFE IN WHICH THE INSTRUMENT IS CONNECTED.

When the instrument is properly adjusted one pair of contacts will be open with high or low level and one pair closed with high or low level.

Relay operation may generally be heard as an audible click when the background noise is not too high. Relay operation may also be determined with one of the circuits shown.

OR

440-115-63
3 WIRE COAXIAL CABLE CHECK

1. DISCONNECT CABLE AT BOTH ENDS. BE SURE ALL TERMINALS ARE STANDING CLEAR. MEASURE RESISTANCE FROM CENTER WIRE TO COTE SHIELD. RESISTANCE SHOULD BE INFINITY (OPEN CIRCUIT).

2. SHORT PROBE AND COTE SHIELD TERMINALS TOGETHER AT ONE END. MEASURE RESISTANCE FROM PROBE TO COTE SHIELD TERMINALS AT OTHER END. RESISTANCE SHOULD BE NEAR ZERO OHMS (SHORT CIRCUIT).

3. REPEAT STEP 2 FOR COTE SHIELD AND GROUND TERMINALS.

4. SHORT COTE SHIELD AND GROUND TERMINALS AT ONE END. REPEAT STEP 4 FOR COTE SHIELD AND GROUND TERMINALS.
2 TERMINAL PROBE CHECK FOR ON/OFF LEVEL CONTROL APPLICATIONS.

STEP 1
Check resistance probe to ground with level below probe.
Resistance should be infinite. Resistance less than 1 megohm indicates excessive leakage probably due to product or condensation in gland/packing nut area.

It may be possible to dry out in oven at 200 degrees F. After drying out loosen set screw and retorque. Consult factory for proper torque value.

STEP 2
Check resistance probe to ground with level above the probe, resistance readings less than 1 megohm indicates defect in the probe insulation or if it is a bare probe the material is conductive and the operate point will be at the tip of the probe.

STEP 3
If the instrument indicates high level all the time even when level is below the probe, the problem may be due to a conductive coating on the probe and may require a Cote Shield (tm) instrument and/or probe.

To verify the effect of coating wipe coating off the probe and recheck instrument operation. If the instrument works after the cleaning consult the factory for the best solution to problem.
TROUBLESHOOTING PROCEDURES

The following procedures should make trouble shooting Drexelbrook equipment as easy as possible using a minimum of equipment and time.

Each component in a system may be checked individually for proper operation or function.

The problem may usually be found in a matter of minutes by following the instructions that are to follow:

FACTORY ASSISTANCE

If attempts to locate the difficulty fail, notify your local factory representative or call the factory direct and ask for the service department. To help us solve your problem quickly please have as much of the following information as possible when you call:

Instrument Model No.______________
Probe Model No.__________________
Purchase Order No._______ & Date____
Cable length_______________________
Application_____________________
Material being measured___________
Temperature _________________ Pressure _
Brief description of the problem____

Which part of the checkout procedures that did not work out properly_________

Do not return equipment without first contacting the factory. Anything being returned should include as much information as possible: The reason for return, original P.O. #, Drexelbrook order No., person to contact at your location, and "Ship to:" address.

Spare instruments are generally in factory stock, for loan while the instrument is being repaired.

To keep paperwork straight please include a purchase order with return of equipment even though the equipment may be coming back for warranty repair.

FIELD SERVICE AND START UP ASSISTANCE

Trained field service men are available on a time plus expenses basis to assist in start ups, diagnosing difficult application problems or in-plant training of personnel.

Periodically instrument training seminars for customers are held at the factory. Contact the Service Manager for details on any of the above.
EXPLOSION PROOF HOUSING (FOR DIV. 1 AREAS)

NEMA IV HOUSING

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HEAVY DUTY HIGH TEMPERATURE PROBE 700-204-33 TOP & SIDE MTD

FLUSH MOUNTED PROBE
*700-207-1*700-207-2

CUTOUT & MOUNTING DIMS OF
*700-207-1*700-207-2

*OR AS SPECIFIED

DREXELBROOK ENGINEERING CO. • HORSHAM, PA. 19044

"COTESHIELD" PROBES USED WITH MODEL 406-1000