TECHNICAL MANUAL

AND

CALIBRATION PROCEDURE

FOR

REYNOLDS EQUIPMENT COMPANY

PRESSURE AND TEMPERATURE RECORDERS

WITH PARTS LIST

REYNOLDS EQUIPMENT COMPANY
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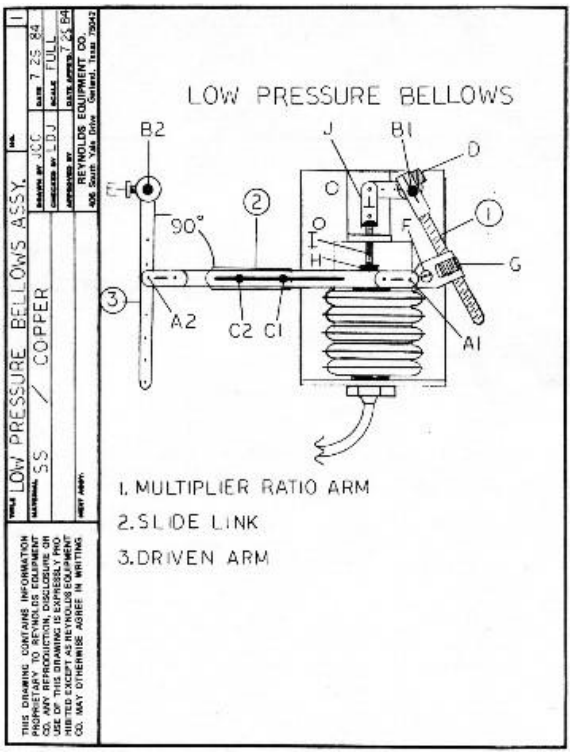
REYNOLDS PRESSURE RECORDERS

The RECO Pressure Recorder is accurate and dependable. It features the RECO stainless steel heat-treated helical wound element incorporating a full length Teflon coated drive shaft for the prevention of hysterisis or deformation in over range conditions. RECO Pressure Recorders have a quoted accuracy of +1/4 of 1% but are calibrated to absolute accuracy. Over range of 1-1/2 times the rated range of the element will not affect return or repeatability. All RECO instrument cases are constructed out of corrosion resistant anodized aluminum and feature a full-length stainless steel hinge and a continuous neoprene seal. RECO Pressure Recorders are available in a full range of pressure sensitivities – 10" – 10,000 PSI, (low pressure elements are phosphor bronze wafer bellows) each comes in 8" or 12" cases.

The RECO Pressure Recorders are designed for a long life under demanding conditions and are protected by our two-year warranty.

LOW PRESSURE BELLOWS CALIBRATING PROCEDURES



STEP 1 Set slide linkage pen (pen to pen) (A1, A2) from middle of the center pivot shaft (B1) to middle of pen shaft (B2).

NOTE: To adjust, loosen two screws (C1, C2) on adjustable link and adjust to proper link and adjust to proper length. Be sure to retighten screws after adjustment.

STEP 2 Apply pressure to 50% of the range of the element and set a 90-degree angle at adjustable link and driven arm.

NOTE: To set the 90 degree angle, loosen allen screw (D) on multiplier on multiplier ratio arm and move driven arm to 90 degree angle. Retighten allen screw (D).

STEP 3 Release pressure. With pressure released, zero pen with micro adjust screw on pen arm. If more adjustment is necessary to zero pen, loosen nut (E) on pen shaft bushing and move shaft and arm to zero and retighten nut (E). (Fine adjust with micro adjust.)

STEP 4 Apply pressure to 100% of pressure element range and note where pen stops. If pen is low at 100%, loosen screw (F), and then adjust thumbnut (G) down. If pen is high at 100%, loosen (F), and then adjust thumbnut (G) up. Retighten screw (F). (Approximately two turns per adjustment.)

STEP 5 After making the 100% adjustment, release pressure and re-zero pen (as in Step 3).

STEP 6 Continue Step 4 and 5 until proper span is achieved.

STEP 7 When span is achieved, pressure up element to 50% range and pen should be at 50% of the chart scale.

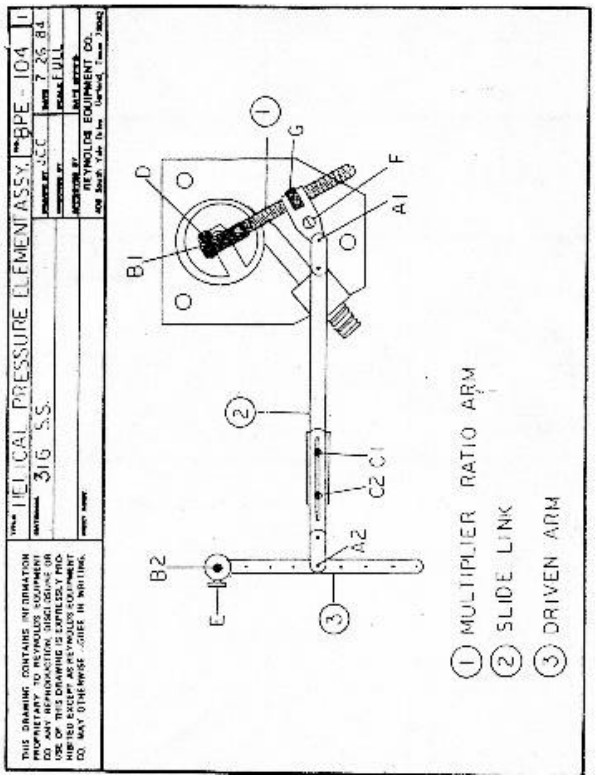
STEP 8 If pen is high or low at 50%, check to make sure there is a 90-degree angle between the slide link and driven arm. If not, repeat Step 2 through Step 5.

STEP 9 If pen is high or low at 50% and there is a 90-degree angle between the slide link and the driven arm, a linearity adjustment must be made. There is a course adjustment and a fine adjustment for linearity. In making linearity adjustments, maintain 50% pressure.

A. Course Adjustment – Loosen nut (H) and turn screw (I) in two complete turns if pen is high at 50%. Turn screw (I) out two complete turns if pen is low at 50%. Be sure to retighten nut. Repeat Steps 2 through 7.
   NOTE: Drive screw pen tab (J) must be disconnected to turn screw (I).

B. Fine Adjustment – Loosen screws (C1, C2) on slide link. Lengthen slide if pen is high at 50%, shorten slide length if pen is low at 50%. (Slide length movement to pen movement approximately 20 to1). Repeat Steps 2 through 7.

STEP 10 If element is not calibrated after last step, contact authorized service center of factory.



STEP 1 Set slide linkage (pen to pen) (A1, A2) from middle of the center pivot shaft (B1) to middle of pen shaft (B2).
NOTE: To adjust, loosen two screws (C1, C2) on adjustable link and adjust to proper length. Be sure to retighten screws after adjustment.

STEP 2 Apply pressure to 50 % of the range of the element and set 90-degree angle at adjustable link and driven arm.
NOTE: To set the 90-degree angle, loosen allen screw (D) on multiplier ratio arm and move driven arm to 90 degree angle. Retighten allen screw (D).

STEP 3 Release pressure. With pressure released, zero pen with micro adjust screw on pen arm. If more adjustment is necessary to zero pen, loosen nut (E) on pen shaft bushing and move shaft and arm to zero and retighten nut (E). (Fine adjust with micro adjust.)

STEP 4 Apply pressure to 100% of pressure element range and note where pen stops. If pen is low at 100%, loosen screw (F), then adjust thumbnut (G) down. If pen is high at 100%,

loosen screw (F), then adjust thumbnut (G) up. Retighten screw (F). (Approximately two turns per adjustment.)

STEP 5 After making the 100% adjustment, release pressure and re-zero pen (as in Step 3).

STEP 6 Continue Steps 4 and 5 until proper span is achieved, pressure up element to 50% of range and pen should be at 50% of the chart scale.

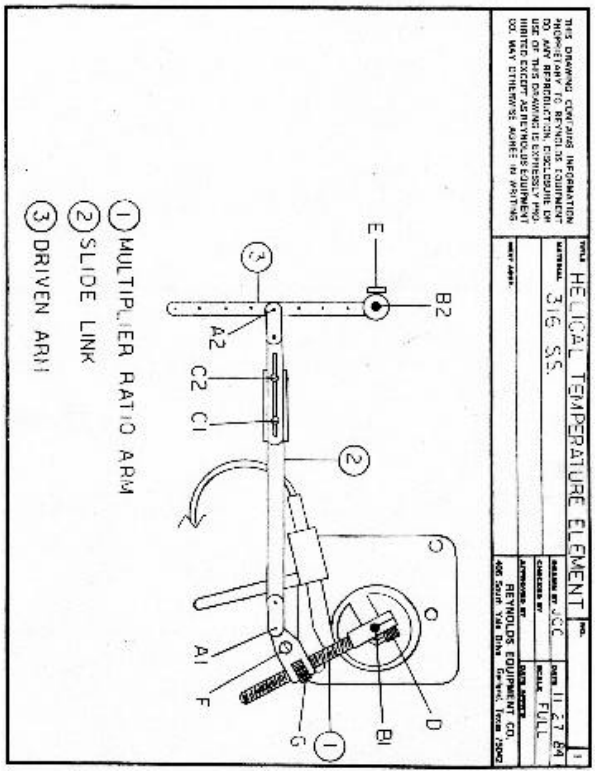
STEP 7 When span is achieved, pressure up element to 50% of range and pen should be at 50% of the chart scale.

STEP 8 If pen is high or low at 50%, first check to make sure there is a 90-degree angle between the slide link (2) and the driven arm (3). If incorrect, repeat Step 2 through Step 5. If there is a 90 degree angle, check to make sure the slide second link is pen to pen (A1, A2) from middle of center pivot shaft (B1) to middle of pen shaft (B2).

NOTE: Remove slide-link and measure B2 to B1 and A2 to A1 with a ruler and compare. If the distance between the two points are not the same, readjust and repeat Steps 2 through 7.

STEP 9 If element is note calibrated after last step, contact Authorized service center or factory.

HELICAL TEMPERATURE ELEMENT CALIBRATING PROCEDURES



To properly calibrate a Helical Temperature Element, it is necessary to have an accurate thermometer, a cold bath and a hot bath. An ice and water solution may be used for the cold bath and a pan of water on a heater may be used for the hot bath.

STEP 1 Set slide linkage (pen to pen) (A1, A2) to be equal distance from the middle of the center pivot shaft (B1) to middle of pen shaft (B2).
NOTE: To adjust, loosen screws (C1, C2) on slide link and adjust to proper length. Be sure to retighten screws after adjustment.

STEP 2 Place the thermometer and temperature bulb in the warm bath and raise the temperature to 50% of the value of the element. (Example: 0-150 degree Element-Raise temperature to 75 degrees). Allow time for the element to stabilize at the temperature and set a 90-degree angle at the connection point where the adjustable slide link (2) connects to the pen shaft driven arm (3). To properly adjust 90-degree angle, loosen screw (D) on multiplier arm, check and adjust to the 90-angle and retighten screw (D).

STEP 3 Adjust pen reading on chart to temperature reading on thermometer. To adjust pen, use fine-adjust screw on pen arm assembly. If more adjustment is needed, loosen nut (E) on drive arm, move pen to correct reading or retighten nut (E).

STEP 4 Raise the temperature in the hot bath to the upper range of the element noting pen reading on chart and thermometer.
NOTE: Accurate calibration can be achieved on a standard 0-150 degree element by obtaining a 100% spread on the high and low check points.

STEP 5 The span adjustment is made by loosening screw (F) on multiplier shaft and turning thumbnut (G). If pen reading is high on the chart, turn (G) one rotation clockwise for each degree necessary to obtain correct reading. If chart reading is low on the chart, turn (G) counter clockwise to make correction. Tighten (F) screw to tighten flag to arm. Adjust pen reading to temperature reading on thermometer. To adjust pen, use fine-adjust screw on driven arm assembly. If more adjustment is needed, loosen nut (E) on drive arm, move pen to correct reading and retighten nut (E).

STEP 6 Submerse temperature bulb and thermometer in cold bath at lower range of element and adjust as in Step 5.

STEP 7 Repeat Steps 4,5, and 6 until proper temperature is achieved both on high and low end of temperature scale.

Parts List
12” Recorder

DESCRIPTION	PER UNIT	PART NUMBER
Door and Bushing Assembly	1	20-515-55
Door Gasket	1	10-515-86
Hinge	1	10-515-27
Hinge Screws (Door Side)	7	31-93
Hinge Screws (Case Side)	7	31-10
Door Slide	1	10-515-23
Door Slide Knob	1	34-126
Door Slide Washer (Bottom)	3	34-627
Door Slide Washer (Top)	2	34-55
Door Slide Screw (Door Side)	1	31-156
Door Slide Screw (Case Side)	1	31-203
Door Glass Gasket	1	10-515-85
Door Glass	1	10-515-42
Door Glass Clips	4	10-515-25
Door Glass Clip Screws 6-32 x 3/16	12	31-1
Door Latch Bushing	1	10-515-83
Door Latch Rod	1	10-515-114
Door Latch Rod “C” Clip	1	31-236
Door Handle	1	34-140
Door Handle Washer	1	34-627
Reynolds Name Plate	1	10-800-5
Serial Number Plate	1	10-515-26
Serial Number Plate Screws 4-40 x 3/8	4	31-2
Serial Number Plate Nuts 4-40	4	31-7
Recorder Case	1	10-515-1
Bulkhead & Static Element Tube Assembly	1	20-515-85
Bulkhead Pressure Fitting Gasket	1	34-205
Bulkhead Pressure Fitting Nut ¼ - 20	2	31-174

Parts List
8” Recorder

DESCRIPTION	PER UNIT	PART NUMBER
Door (Solid)	1	10-800-2
Door for Glass	1	10-800-2A
Door Glass	1	10-800-48
Door Glass Gasket	1	10-800-47
Door Gasket	1	10-515-85
Door Hinge	1	10-800-3
Door Hinge Screws (Door Side) 6-32 x 3/16	3	31-1
Door Hinge Nuts (Door Side) 6-32	3	31-250
Door Hinge Washers (Door Side)	3	31-248
Door Hinge Screws (Case Side) 6-32 x 1/4	3	31-83
Door Hinge Nuts (Case Side) 6-32	3	31-250
Reynolds Name Plate	1	10-800-5
Serial Number Plate	1	10-515-26
Serial Number Plate Screws 4-40 x 1/4	4	31-10
Serial Number Plate Nuts 4-40	4	31-7
Door Hasp	1	10-800-66A
Door Hasp Screw	2	31-1
Recorder Case (8”)	1	10-800-1
Bulkhead and Tubing Fitting Assembly	1	
Bulkhead Pressure Fitting Gasket	1	34-205
Bulkhead Pressure Fitting Bolt ¼ - 20 x 3/4	2	31-5
Bulkhead Fitting Nut ¼ - 20	2	31-274
Back Plate	1	10-800-6
Back Plate Bolt (1/4 – 20 x ¾)	4	31-5
Back Plate Bolt Nut (1/4 – 20)	4	31-174