NATIONAL TYPE EVALUATION PROGRAM

Certificate of Conformance

for Weighing and Measuring Devices

For:
Load Cell
Tension, Stainless Steel
Model: ZX Family
n_{max} Single Cell, Class III: 5 000
n_{max} Single Cell, Class III L: 10 000
Capacity: 250 to 20 000 lb
Accuracy Class: III, IIIL

***Submitted By: Contact Info. Updated: October 2010**
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Standard Features and Options

Standard Features:

- 4-wire Design
- Nominal Output: 3.0 mV/V

The specific models and capacities of load cells covered by this certificate are listed on page 2.

Model	Capacity (lb)	Class III Single Cell v_{min} (lb)	Class III Multiple Cell v_{min} (lb)	Class III L Single Cell v_{min} (lb)	Minimum Dead Load (lb)
ZX-250	250	0.025	0.025	0.02	10.0
ZX-500	500	0.050	0.050	0.04	10.0
ZX-1000	1 000	0.100	0.100	0.08	10.0
ZX-2500	2 500	0.250	0.250	0.20	10.0
ZX-3000	3 000		0.60	0.24	10.0
ZX-5000	5 000		1.00	0.40	10.0
ZX-10 000	10 000		2.00	0.80	10.0
ZX-15 000	15 000		3.00	1.20	10.0
ZX-20 000	20 000		4.00	1.60	10.0

Temperature Range: -10 ºC to 40 ºC (14 ºF to 104 ºF)

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of "NIST Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages. *Editorial changes, not affecting the type or metrological content, corrected this certificate.

Tim Tyson
Chairman, NCWM, Inc.

Randy Jennings
Chairman, National Type Evaluation Program Committee
Issued: October 27, 2010

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Cardinal Scale Manufacturing Co.

Load Cell / ZX

Application: The load cells may be used in both Class III and III L scales for both single and multiple cell applications consistent with the model designations, number of scale divisions, and parameters specified in this certificate. Load cells of a given accuracy class may be used in applications with lower accuracy class requirements provided the number of scale divisions, the v_{min} values, and temperature range are suitable for the application. The Manufacturer may market load cells with fewer scale divisions (n_{max}) and with larger v_{min} values than those listed on the certificate. However, the load cells must be marked with the appropriate n_{max} and v_{min} for which the load cell may be used.

Test Conditions: This certificate supersedes Certificate of Conformance No. 92-192A2 and is issued to include a 15 000 lb capacity load cell in the model family. No additional testing was required. The original test conditions are repeated below for reference.

Certificate of Conformance Number 92-192A2: This certificate supersedes Certificate of Conformance No. 92-192A1 and is issued to decrease the vmin values for the class III L single cell models listed on page 2.

Certificate of Conformance Number 92-192A1: Two 5,000 lb capacity load cells was were tested at NIST using dead weights as the reference standard. The data were analyzed for both single and multiple load cell applications. The cells were tested over a temperature range of -10 to 40°C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure.

Certificate of Conformance Number 92-192: Two 500-lb capacity load cells were tested at NIST using dead weights as the reference standard. The data were analyzed for both Class III and Class III L single load cell applications. The cells were tested over a temperature range of -10 to 40°C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure. Representatives from the National Institute of Standards and Technology analyzed the data.

Evaluated By: NIST Force Group, NIST Office of Weights and Measures

Type Evaluation Criteria Used: NIST, Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices, 1994. NCWM, Publication 14: Weighing Devices, 1994.

Conclusion: The results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

Information Reviewed By: T. Grimes (NIST); S. Patoray (NCWM) 92-192A3