



Factory Mutual Research

1151 Boston-Providence Turnpike
P.O. Box 9102
Norwood, Massachusetts 02062

J.I. 1X2A1.AE
(3615)

October 28, 1993

**LP-200 PULSE POINT LEVEL CONTROL AND
GLL110200 INSTRUMENT ENCLOSURE
FOR
HAZARDOUS (CLASSIFIED) LOCATIONS
(PRODUCT REVISION)**

from

**BINDICATOR COMPANY
1915 DOVE STREET
PORT HURON, MI 48061**

I INTRODUCTION

1.1 Bindicator Company (manufacturer) requested Factory Mutual Research Corporation (FMRC) Approval of their revised LP-200 Pulse Point Level Control and GLL110200 Instrument Housing as explosionproof for Class I, Division 1, Groups C & D and dust-ignitionproof for Class II, Division 1, Groups E, F, & G hazardous (classified) locations, indoor and outdoor (NEMA 4).

1.2 The revisions made to the equipment do not effect the model number breakdowns. FMRC Approval Guide listings will be revised for the LP-200 Pulse Point Level Control to correct an error in the original FMRC Approval Report and will be shown as follows:

Pulse Point Level Control. Model LP2-X-a-10 / LP2-b-A-X-A-10-0

a = Voltage 1 or 2.
b = Tuning fork 1, 2 or 3.

1.3 As described by this report, the construction of the subject equipment provides the degree of protection against electrical shock, fire and injury required for hazardous (classified) locations. Installation shall be in accordance with the manufacturer's instructions and the National Electrical Code.

1.4 The equipment described by this report was shown to comply with the applicable requirements of the following standards.

<u>TITLE</u>	<u>AUTHOR-NUMBER</u>	<u>DATE</u>
Explosionproof Electrical Equipment	FMRC-3615*	March 1989
Electrical Equipment For Use In Hazardous Locations	FMRC-3600*	March 1989
Electrical and Electronic Test, Measuring, and process Control Equipment	FMRC-3810*	March 1989
Enclosures for Electrical Equipment	ANSI/NEMA-250*	1991

* These standards are based in large part on the applicable American National Standards Institute (ANSI) standards.

1.5 This report supplements FMRC Reports 0R6A3.AE and 0T8A2.AE which describe the original testing of the LP-200 Pulse Point Level Control and GLL110200 Instrument Enclosure.

II DESCRIPTION

2.1 The descriptions of the LP-200 Pulse Point Level Control and GLL110200 Instrument Enclosure have remained essentially unchanged from that reported in FMRC Reports 0R6A3.AE and 0T8A2.AE respectively. The enclosures for the GLL110200 Instrument Enclosure and the LP-200 remote housings are identical. The manufacturer has changed the machining process for the GLL110200 Instrument Enclosure / LP-200 remote housing which results in the reduction of the wall thickness for ease of manufacturing.

2.2 For additional descriptive information, see attached Model LP-200 sales literature. The following options described in the attached LP-200 literature were not tested as part of this or the original program at the request of the manufacturer:

Enclosure Rating: G = General Purpose NEMA 4/5

Tuning Fork: 4 = Hastelloy "C"

Enclosure Material: S = 304 Stainless Steel

Assembly Configuration: B = Pipe Extended (Low Temp Cable)

C = Pipe Extended (High Temp Cable)

Pipe Extended Units: 1 through 6 = Types

III MARKINGS

The manufacturer's labels are permanently attached to these units and have remained unchanged with this revision.

IV EXAMINATION AND TEST

4.1 Hydrostatic Test - A hydrostatic test was conducted on the LP-200 remote housing / GLL110200 Instrument Enclosure at a pressure equal to 400% of the maximum ignition pressure. The pressure was increased gradually and held at the test pressure 269 psi (1854 kPa) for one minute. No visible permanent deformation occurred. This is satisfactory.

4.2 All other test results described in FMRC Reports 0R6A3.AE and 0T8A2.AE are still considered satisfactory for the revised LP-200 Pulse Point Level Control and GLL110200 Instrument Enclosure respectively.

V MANUFACTURER'S RESPONSIBILITIES

5.1 The manufacturer shall advise FMRC of all proposed changes to the documentation file in Section VIII.

5.2 On 100% of production, the LP-200 Pulse Point Level Control shall be dielectric tested. The power input connections and associated circuitry shall withstand for one minute, with no insulation breakdown, the application of 1000 Vac or 1400 Vdc with respect to the protective ground terminal. Alternatively, test potentials 20% higher may be applied for at least one second.

WARNING: The dielectric test required may present a hazard of injury to personnel and/or property and should only be performed under controlled conditions, and by persons knowledgeable of the potential hazards of such testing to minimize the likelihood of shock and/or fire.

5.3 On 100% of production, the manufacturer shall conduct routine continuity inspections of the protective grounding systems of the LP-200 Pulse Point Level Control and GLL110100 Instrument Enclosure.

VI FACILITIES AND PROCEDURES AUDIT

The manufacturer's design and manufacturing facilities in Port Huron, Michigan and Port Sanilac, Michigan are subject to follow-up audit inspections by FMRC. The facilities and quality control procedures in place have been found to be satisfactory to manufacture the product identical to that tested and Approved.

VII CONCLUSION

The Bindicator Company LP-200 Pulse Point Level Control and GLL110100 Instrument Enclosure, as described in this report, continue to meet FMRC Approval requirements. Approval is effective when the Approval Agreement is signed and received by FMRC.

VIII DOCUMENTATION FILE

The following documentation is applicable to this equipment and is on file at FMRC. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FMRC. The Approved Product - Revision Report, FMRC Form 797, shall be forwarded to FMRC as notice of proposed changes.

LP-200 Pulse Point Level Control

<u>Document No.</u>	<u>Description</u>	<u>Last Rev.</u>	<u>New Rev.</u>
LVF120022	MACHINED REMOTE COVER	3/10/87	D
LVF120091	MACHINED HOUSING	2/28/87	C
LVF130101	SIGHT GLASS FITTING	3/17/87	E
LVF140002	CAST COVER	6/29/83	D
LVF140003	CAST HOUSING	6/29/83	G
LVP100200-C	LP-200 REMOTE ELECT ENCL	9/19/88	C
LVP110200-C	LP-200 REMOTE FORK ASSY	9/19/88	C
LVP130028	NAMEPLATE 120	D	D
LVP130029	NAMEPLATE 240	D	D
LVP130035	NAMEPLATE REMOTE	E	E
LVP130045	HOOKUP LABEL REMOTE	2/13/89	2/13/89
LVP180003	INSTR. & OPER. MANUAL	10/88	02/92

GLL110100 Instrument Enclosure

<u>Document No.</u>	<u>Description</u>	<u>Last Rev.</u>	<u>New Rev.</u>
GLL110200	ASSEMBLY DRAWING	-	B
GPG120004	COVER, MACHINED	New	-
GPG120005	HOUSING, MACHINED	New	B
LRF130147	NAMEPLATE	New	A
LRF140002	COVER, CAST	D	D
LRF140003	HOUSING, CAST	F	G

EXAMINATION AND TESTING BY: D. C. Anderson, J. J. Woolley

ORIGINAL DATA: Test notebook No. 93-576

ATTACHMENTS: LP-200 Sales Literature LVP180000

REPORT BY:

David C. Anderson
 David C. Anderson
 Electrical Engineer

REPORT REVIEWED BY:

R. P. Lutfy
 Roger P. Lutfy
 Electrical Section Manager