



The Ohmart Corporation

4241 ALLENDORF DRIVE

P. O. BOX 9026

CINCINNATI 9, OHIO

April 9, 1962

U.S. Atomic Energy Commission
Isotopes Branch
Division of Licensing and Regulations
Washington 25, D.C.

Attention: Mr. J.A. Mason, Chief

Gentlemen:

The Ohmart Corporation hereby applies for general licenses for the following beta gage models, pursuant to Section 30.21(c) of 10 CFR-30/

<u>MODEL TYPE</u>	<u>OUTLINE & SOURCE HOLDER DWG. NO.</u>	<u>RADIATION PATTERN DWG. NO.</u>
LBG-1	B-3097	C-2886
BBG-2	B-3102	C-2887
LBG-3	B-3101	C-3099
BG-1	C-3104	C-2888
BG-2	C-3105	C-2889
BG-3	C-3106	C-3098

Copies of the above drawings are attached with copies of the two "CAUTION" labels to be utilized on these gages. A copy of the Instruction Manual and sales bulletin #BG and #LBG for these gages are enclosed. Drawing C-2750 shows a typical interconnecting wiring diagram for these gage designs.

The Model BG-1 and LBG-1 gages use Krypton-85 sources, and have aluminized 0.001" thick Mylar windows over the source aperture and over the cell. This Mylar has now been in operation on a Model LBG-1 gage for 11 months with no apparent physical changes. However, until further data is available, we intend to enforce the changing of the Mylar window every six months on all BG-1 and LBG-1 gages.

The attached drawings show the gage base material of construction to be steel, and the sources are all secured in the source holder by steel plates. The source holder and shutter assembly are removable from the

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front of the gage only by first removing from bolts on the bottom of the gage. Their location is such as to be invisible and inaccessible to unauthorized persons.

Lengthy tests of the solenoid-operated shutter mechanism have been made. A gage with this mechanism has been in use for over 8 months with satisfactory operation of the shutter. The brass guides for the shutter and for the actuating rod insure low friction and oversize holes in the rod guides permit exceedingly free operation.

If the gage were to undergo a high temperature due to fire, the lead might melt, but the entire outside casing is made of a minimum of 1/4" steel, and therefore the source cannot possibly escape. Also, all Strontium-90 sources are doubly encapsulated, and we utilize a stainless steel window over the Strontium-90 source. The Krypton-85 capsules are singly sealed, but represent a minor hazard if the Mylar window and source seal are punctured since the Krypton is a gas.

Some details of the shutter design are in order and the bottom plate of the shutter is made of steel and this steel rides on brass guides, giving an anti-friction surface. No protrusions are present and the shutter rides very freely on its guides. The shutter is made of sheet steel and is poured full of lead. The shutter can be locked in the closed position by the keyed switch on the control panel. Thus, when stored, the spring on the shutter keeps the shutter closed because there is no power on the solenoid.

The "CAUTION" label per Drawing B-3095 is for the LBG-1 and BG-1 gages with Krypton-85 sources. The paragraph concerning source wiping is deleted on this label. The "CAUTION" label per Drawing B-2778 is for LBG-2 and BG-2 gages with Strontium-90 sources. The small "Caution - Do Not Remain Within One Foot" label, per Drawing A-3094 will be used whenever access to the area around the gage is possible where the field exceeds 0.25 MR/HR. The "CAUTION" sticker, per Drawing A-2964 and sample attached, are on all gages, also.

From the enclosed instruction manual, you can see the complete discussion of radiation safety that is afforded the user.

We stress in our sales contacts that the structural factors of safety are excessive in our beta gage designs, and the only heavy duty plug-in industrial type relays, solenoids and switches are used.

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Removal of the source from the source holder is only possible by:

1. Gaining access to the underside of the gage base.
2. Removing four screws on the source holder assembly sub-plate.
3. Pulling the sub-plate and assembly out of the gage.
4. Removing four additional screws that hold the source holder to the sub-plate.
5. Removing the source retainer plate and lead plug.
6. Then removing the source itself. Strontium-90 sources have an integral flange that is also screwed to the source holder.

Rigid quality control tests are performed on each gage. Each gage must operate for a minimum of 24 hours in continuous tests, and it is checked by a member of the engineering department for proper compliance to the specifications. Thus, we are assured that each gage is as good, or better than the original gages used as a prototype mentioned above.

Concerning shutter position indication, an angle cam on the shutter closes a micro-switch on the source holder, lighting a green "Source Closed" light on the control panel and on the rear of the gage base. When the shutter's cam is in open position, the other contact on the micro-switch lights a red "Source Open" light on the control panel and on the rear of the gage base.

The most adverse environmental conditions in which we intend to install these gages is a minimum of $+40^{\circ}\text{F}$ and a maximum of $+125^{\circ}\text{F}$ for the web passing through the gap. Relative humidity will be less than 100% in all cases and normal indoor atmospheric pressure conditions will prevail. When extreme dust conditions exist, positive pressure air purging of the gage base and measuring cell housing are mandatory.

With regard to radiation Pattern diagrams, the gages will be so installed as to meet the following requirements:

- a) No person will receive a radiation exposure to a major portion of his body in excess of 0.5 REM in a year under ordinary circumstances of use.

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b) The gages will have less than 5 MR/HR at 1 foot from the surface when the shutter is in either the "ON" or the "OFF" position. For the Model LBG-1, LBG-2, and BG-1, and BG-3 gages, the radiation with source "OFF" is less than 5 MR/HR on the surface of the gage.

c) The gages will be installed in an area where a major portion of the body of a person cannot be exposed to a field in excess of 5 MR/HR under ordinary circumstances of use.

d) The gages will be installed in an area such that the field is less than 0.25 MR/HR where continuous occupancy by personnel is possible. Under such conditions, the gage will have the "CAUTION" sign per Drawing A-2775 stating "DO NOT REMAIN WITHIN _____ FEET".

e) The gages will not be installed without an area barrier, which barrier is interlocked to put the source in the "OFF" condition prior to the area under 12" from the gage head becoming accessible to personnel, if there is a radiation level greater than 50 MREM per hour accessible to a major portion of the body or radiation level greater than one REM per hour accessible to entire hand and/or forearm.

With the subject gages, the only time the one REM per hour level could be established so as to be accessible to a hand or forearm is when the "air gap" must exceed 1", which will be a rarity.

Thus, when wider "air gaps" are required, the area interlock will be furnished.

Your division's efforts in our behalf are very much appreciated. Please do not hesitate to call us collect, or write us, if further information or explanation is desired.

Very truly yours,

THE OHMART CORPORATION

Snowden Rowe

Snowden Rowe
Product Manager
Beta Gage Division

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Attach - Dwg. #A-3091	B-3097	C-2886
A-2764	B-3102	C-2887
A-2775	B-3101	C-3089
B-3095	C-3104	C-2883
C-3105	C-3106	C-2882
	C-2758	C-3095

Enclosures not in file