Perry Ballard/advertising inc

April 20, 1979

Mr. Robert Minogue
Director of the Office of
Standards Development
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Minogue:

In light of recent developments at the Three Mile Island nuclear power plant, I thought it might be worthwhile to bring to your attention a product manufactured by a client of mine, the G.A.L. Gage Company, Inc. The HI-LO* Welding Gage, manufactured by G.A.L., is a device used to properly align butt and socket welds on critical piping systems used in the construction of nuclear generating plants, i.e. reactor coolant.

As you may see by the enclosed literature, the HI-LO* gage measures internal mismatch on butt welds to 32nds of an inch, well within the existing codes. It also allows proper setup of socket welds. An improperly spaced (1/16" minimum) socket weld is difficult to detect during construction, but can become plainly apparent during in-service operation of a nuclear plant.

The HI-LO* gage improves welding accuracy (and therefore performance safety) and cuts welding time and waste (and therefore costs).

> The G.A.L. HI-LO* gage is now used by many of the major nuclear power plant manufacturing companies, with the notable exception of Babcock and Wilcox, the company which designed and supplied critical components for the Three Mile Island plant.

The G.A.L. Gage Company would be happy to forward a gage to you for inspection and/or testing proposes. For any further information please contact Mr. Goodwin A. Lycan, G.A.L. Gage Company, P.O. Box 231, Stevensville, Michigan 49127. (616) 429-1798

Best Regards,

Perry Ballard

Perry Ballard
President

PB:ms
cc: Mr. Lee Gossick, Executive Director of Operations, NRC
Mr. Marcus Rowden, Chairman, NRC
Honorable David Stockman, Congressman 4th District

7908030183

*Registered trademark of the G.A.L. Gage Company

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G.A.L. Gage Co.

POST OFFICE BOX 23 STEVENSVILLE, MICHIGAN 49127
616-429-1798

✓ Reduce butt weld fit-up time.
✓ Cut fit-up/inspection rejects AND get more accurate inspections.
✓ Improve tack-up inspection accuracy.
✓ Eliminate visual rejects of reinforcement heights.
✓ Cut radiographic (NDE) rejects by 50% or more!

You can reduce welding costs in all these ways and more with one, handy pocket tool.....the G.A.L. HI-LO* Welding Gage.

The G.A.L. HI-LO* Gage measures key welding dimensions to an accuracy (1/32") not possible any other way. This extreme accuracy permits quicker more accurate fit-ups that check out within code limitations, thereby CUTTING WELDING COSTS!

A fitter can get the exact alignment quicker and easier. Welders know their welds are accurately prepared and completed. Q.C. people can confirm their inspections are within code. All with the HI-LO* Gage.

And these accuracy savings come on a number of measurements!

The HI-LO* Gage gives craftsmen or inspectors an easy way to measure these welding dimensions to 1/16" (1/32" where indicated):

- internal mismatch even after tack-up. (to 32nds)
- height of butt weld reinforcements. (to 32nds)
- fillet weld size -- both legs measured easily.
- pipe wall thickness, even after tack-up, to nearest 16th.
- length between scribe lines on fitting and pipe for socket weld fitup producing a within-code weld with no cracks due to thermal contraction.
- precise fit-up gap go or no-go on butt welds (between 1/16" and 3/32").
- precise $37\frac{1}{2}^{\circ}$ bevel on pipe and prep. (code requirement)

This handy pocket gage is made of stainless steel for long wear and protects against contamination in nuclear applications. It is available in standard 16ths and 32nds or in metric and, upon request is available calibrated.

* HI-LO is a trademark of the G.A.L. Gage Company

MANUFACTURERS OF THE "HI-LO" WELDERS GAGE

AN INDISPENSIBLE TOOL FOR FIT-UPS AND RADIOGRAPHED WELDS.

464 095

The spring-loaded Vlier plunger allows smooth slide action, making measurement adjustments quick and easy -- a lockscrew holds measurements for later comparison or transfer. The exclusive G.A.L. wide body assures interior alignment stops are parallel with the pipe run.

Over 90 corporations and public utilities including the NRC are presently using the HI-LO* Gage to cut their welding costs. Is it any wonder?

Rejects at any stage in a weld are costly -- some running to twice, three times, even ten times the proper cost of the weld. These rejects start before any welding begins -- with improper alignment. Assuring internal mismatch meet codes before expensive welding starts is where the HI-LO* Gage can save substantially. Remember GOOD FIT-UP assures a GOOD WELD.

Just one simple gage....to get seven different measurements....to give more accurate fit-up and assure acceptable completed butt welds...to cut rejects at every step in the welding process....to assure that socket welds are completed within the code (1/16" pipe-end-to-shoulder gap to allow for thermal contraction).

But don't take our word for it. One HI-LO* Gage on your job site will demonstrate its worth. Give it to a fitter or welder to monitor fit-up. Let welders use it to check fillet weld legs (codes require two passes minimum) before they move to the next weld. Tell your Q.C. people to use it and watch the accuracy of their internal mismatch inspections increase.

We're sure you'll find what over 90 corporations have already found: that the HI-LO* Welding Gage will save you two to three times its $48.00 price during the first month alone. (Eliminate one radiographic reject because of improper fit-up or internal mismatch and you've more than paid for the gage.)

To test this gage for yourself, just fill in the reservation form and forward it with your company's purchase order. We'll ship your HI-LO* Gage via UPS the same day we receive your notice. Or call 616/429-1798 for shipment today. Then you can start reducing welding rejects and cutting welding costs immediately!

Hope to hear from you soon,

G A Lycan

G.A. Lycan, President
G.A.L. Gage Company

GAL:ms

P.S. -- Everyone who uses the HI-LO* Welding Gage quickly sees its value -- so gages have a tendency to be "borrowed". Since everyone wants one, it saves time and trouble (and money) to order in quantity. More people using the HI-LO* gage on your job means greater savings in time and materials. Order today and start saving right away.

MEASURE INTERIOR MISALIGNMENT

Loosen the locking screw. Insert the gage into the pipe by turning the gage sideways and pushing the top part of the gage through the fit-up gap (Illustration 1). Twist the gage 90°. **Slide the gage body up until it is snug against the outer pipe wall.** This exclusive G.A.L. feature assures you gage is square and reading displayed is correct. Place your fingers on top of the gage feet and pull down until the internal alignment stops are snug against the I.D.'s of the butting pipes (Illustration 2). Tighten the locking screw. Twist the gage 90° and remove from the pipe. Read the misalignment on the vertical (interior alignment) scale in 32nds (mm) (Illustration 3).

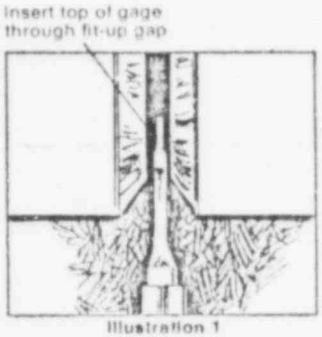


Illustration 1

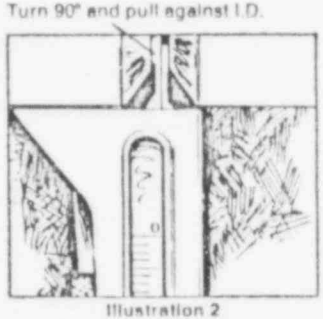


Illustration 2

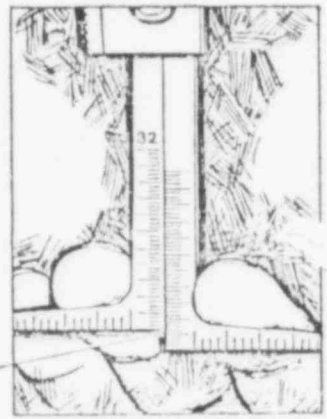


Illustration 3

MAKE TROUBLE-FREE SOCKET WELDS USING THE G.A.L. METHOD

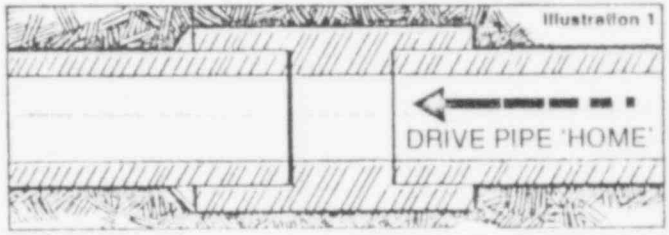


Illustration 1

1. Drive the pipe "home" in the fitting. (Illustration 1.)
2. Scribe a line on the fitting ½" from the shoulder. Scribe another line on the pipe ¾" from the shoulder of the fitting. (Illustration 2)
3. Withdraw the pipe ⅛" (3 mm) using the Hi-Lo gage to accurately measure the operation. (Illustration 3)
4. T[illegible]k weld the pipe [illegible] fitting.

[illegible]sing the Hi-Lo [illegible]easure, [illegible]e that the [illegible]ce between the scribe lines is 1⅜". Note: **The distance from the center of the scales on the gage's feet to the first increment is ¼" (5 mm).**

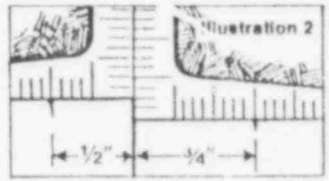


Illustration 2

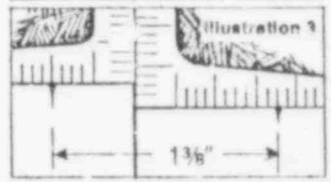


Illustration 3

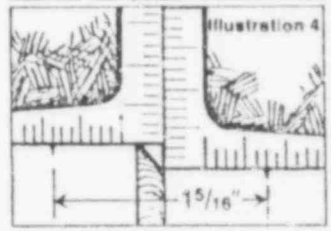


Illustration 4

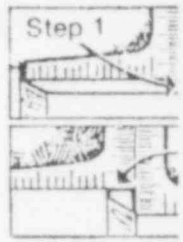
6. Complete socket weld.
7. **Finally, use G.A.L. Gage to measure distance between scribe lines. The distance after welding should be approximately 1⁵/₁₆".** (Illustration 4)

MEASURE FILLET WELD SIZE TWO (2) WAYS

When the legs of the fillet weld are the s[illegible] size as the thickness of the fitting . . .

Loosen the locking screw. Place the gage over the fillet weld as shown in the illustration. Tighten the locking screw. Read the fillet weld height on the vertical (interior alignment) scale in 32nds (mm). Read the fillet weld length on the horizontal (fillet weld size) scale in [illegible]16ths (mm). **[illegible] is ¼" (5 mm) [illegible] center of the [illegible] the first incre[illegible] horizontal sca[illegible]**

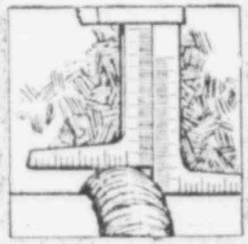
When the legs of the fillet are smaller than the thickness of the fitting . . .



Loosen the locking screw. To measure the length of the vertical leg of the fillet weld, place one foot of the gage on the pipe as shown in the diagram labeled Step 1, placing the other foot of the Hi-Lo gage just on top of the fillet weld. Tighten the locking screw. Read the length of the vertical leg on the vertical (interior alignment) scale. To measure the horizontal leg of the weld, loosen the locking screw and place the gage on the pipe as shown in the [illegible]diagram label[illegible] Tighten th[illegible] screw and rea[illegible] of the horizo[illegible] the horizontal [illegible] size) scale in [illegible] **Remember th[illegible] increment on [illegible] is ¼" (5 mm [illegible] center of the [illegible]**

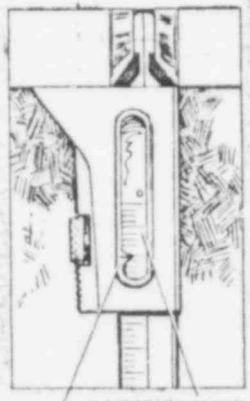
MEASURE THE CROWN HEIGHT OF THE BUTT WELDS

Loosen the locking screw. Place one foot flat on the pipe and the other on the crown of the weld. Read the crown height on the vertical (interior alignment) scale in 32nds (mm).

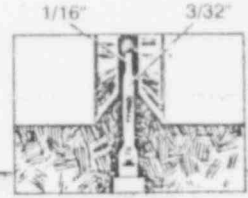


MEASURE PIPE WALL THICKNESS

Loosen locking screw. Place interior alignment stops against I.D. of pipe as you would to measure interior misalignment. Slide gage body against pipe O.D. Tighten locking screw and remove the gage. Read the pipe wall thickness on the material thickness (top) scale in 16ths (mm). The material thickness is indicated by the material thickness indicator.



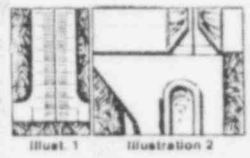
MEASURE FIT-UP GAP



The interior alignment stops of the Hi-Lo gage are precision milled and can be used to measure the fit-up gap between pipes. Turned sideways, the interior alignment stops measure 1/16" at the top and 3/32" at the bottom. To measure fit-up gap, simply turn the gage sideways and insert the interior alignment stops into the fit-up gap. If the gage will not fit into the gap, it is less than 1/16". If it fits partially into the gap, it is between 1/16" and 3/32". If the gage goes in and out of the gap freely, the gap is wider than 3/32".

MEASURE BEVEL ON END PREPARATION

Make sure the interior alignment scales are in the "zero" position, so the interior alignment scales are aligned side by side (Illustration 1). Insert the gage into the pipe as you would to measure interior alignment.



For this operation it is important that the gage is square with the pipe, so slide the gage body up until it is snug against the outer wall of the (Illustration 2). The unique design of the G.A.L. gage will assure you the gage is square. Keeping the gage body snug against the outer wall of the pipe, push the gage up into the fit-up gap as far as it will go. If the beveled shoulders on the gage fit snug against the bevel on the pipe end, you have the correct 37½° bevel which is common to most end preps.

HOW TO USE