RIVERWELD Hi-lo Gauge

RIVERWELD Hi-Lo Welding Gauge Instruction Manual

Model: Hi-lo Gauge (Inches and Metrics)

1. Introduction

The RIVERWELD Hi-Lo Welding Gauge is a precision instrument designed for inspecting various parameters in welding applications. It measures internal pipe misalignment, pipe wall thickness, fit-up gap, bevel on end preparation, weld crown height, and fillet weld size. This gauge features both imperial (standard) and metric scales for versatile use. It is constructed from durable stainless steel.

Figure 1: The RIVERWELD Hi-Lo Welding Gauge and its packaging.

2. Setup and Scale Selection

The Hi-Lo Welding Gauge is designed for ease of use with both imperial and metric measurements. To switch between the standard (inches) and metric scales:

1. Loosen the locking screw located on the gauge body.
2. Carefully remove the sliding body of the gauge.
3. Flip the sliding body to expose the desired measurement scale (either imperial or metric).
4. Reinsert the sliding body into the main gauge frame and tighten the locking screw to secure it in place.

Figure 2: The gauge displaying both imperial and metric scales.

3. Operating Instructions

This section details the procedures for using the Hi-Lo Welding Gauge to perform various measurements.

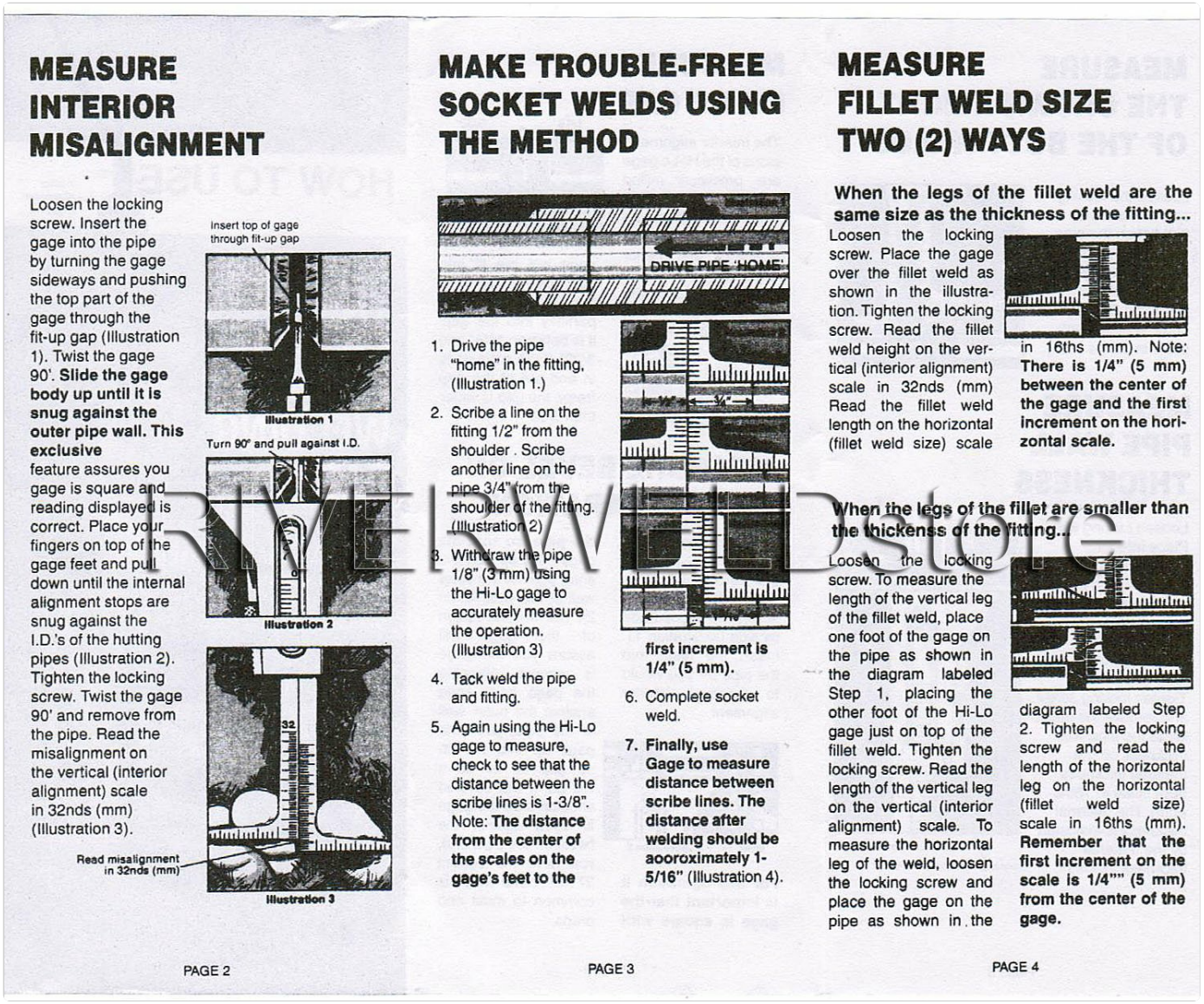
3.1. Measuring Internal Misalignment (Hi-Lo)

This measurement helps prevent socket weld cracking by ensuring proper pipe alignment.

1. Loosen the locking screw.
2. Insert the gauge into the pipe by turning it sideways. Push the top part of the gauge through the fit-up gap.
3. Turn the gauge 90 degrees.
4. Slide the gauge body up until it is snug against the outer pipe wall. This ensures the gauge is square and provides an accurate reading.
5. Place your fingers on top of the gauge body and pull down until the internal alignment stops are snug against the inside

diameters (I.D.'s) of the abutting pipes.

6. Tighten the locking screw.
7. Twist the gauge 90 degrees and remove it from the pipe.
8. Read the internal misalignment on the vertical (internal alignment) scale in 32nds of an inch or millimeters.



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** 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 hutting 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).

Insert top of gage through fit-up gap

Illustration 1

Turn 90° and pull against I.D.

Illustration 2

Read misalignment in 32nds (mm)

Illustration 3

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MAKE TROUBLE-FREE SOCKET WELDS USING THE METHOD

DRIVE PIPE 'HOME'

1. Drive the pipe "home" in the fitting, (Illustration 1.)
2. Scribe a line on the fitting 1/2" from the shoulder . Scribe another line on the pipe 3/4" from the shoulder of the fitting. (Illustration 2)
3. Withdraw the pipe 1/8" (3 mm) using the Hi-Lo gage to accurately measure the operation. (Illustration 3)
4. Tack weld the pipe and fitting.
5. Again using the Hi-Lo gage to measure, check to see that the distance between the scribe lines is 1-3/8". Note: **The distance from the center of the scales on the gage's feet to the first increment is 1/4" (5 mm).**
6. Complete socket weld.
7. **Finally, use Gage to measure distance between scribe lines. The distance after welding should be aooroximately 1-5/16"** (Illustration 4).

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MEASURE FILLET WELD SIZE TWO (2) WAYS

When the legs of the fillet weld are the same 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 16ths (mm). Note: **There is 1/4" (5 mm) between the center of the gage and the first increment on the horizontal scale.**

When the legs of the fillet are smaller than the thickenss 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 diagram labeled Step 2. Tighten the locking screw and read the length of the horizontal leg on the horizontal (fillet weld size) scale in 16ths (mm). **Remember that the first increment on the scale is 1/4"" (5 mm) from the center of the gage.**

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Figure 3: Steps for measuring internal misalignment.

3.2. Measuring Pipe Wall Thickness

1. Loosen the locking screw.
2. Place the interior alignment stops against the inside diameter (I.D.) of the pipe, similar to measuring internal misalignment.
3. Slide the gauge body against the outside diameter (O.D.) of the pipe.
4. Tighten the locking screw.
5. Read the pipe wall thickness indicated by the material thickness indicator on the gauge.

3.3. Measuring Fit-Up Gap

The internal alignment stops are precision milled to measure the fit-up gap between pipes.

1. Insert the gauge into the fit-up gap.

2. If the gauge does not fit into the gap, the gap is less than 1/16 inch.
3. If the gauge fits partially into the gap, it is between 1/16 inch and 3/32 inch.
4. If the gauge goes all the way through, the gap is wider than 3/32 inch.

3.4. Measuring Bevel on End Preparation

1. Ensure the interior alignment scales are in the "zero" position.
2. Slide the gauge into the pipe, maintaining squareness with the pipe.
3. Slide the gauge body up until it is snug against the outer wall of the pipe. The gauge's design ensures squareness.
4. Keeping the gauge body snug against the outer wall, push the gauge up into the fit-up gap as far as it will go.
5. If the beveled shoulders on the gauge fit snugly against the bevel on the pipe end, this indicates a correct 37-1/2° bevel.

3.5. Measuring Crown Height of Butt Welds

1. Loosen the locking screw.
2. Place one foot of the gauge flat on the pipe and the other foot on the crown of the weld.
3. Read the crown height on the vertical (internal alignment) scale in 32nds of an inch or millimeters.

3.6. Measuring Fillet Weld Size (Two Methods)

Method 1: When Fillet Weld Legs are Equal to Fitting Thickness

1. Loosen the locking screw.
2. Place the gauge over the fillet weld as shown in the illustration (refer to original manual image for visual).
3. Read the fillet weld size on the horizontal (fillet weld size) scale in 16ths of an inch or millimeters.
4. *Note: There is a 1/4 inch (5mm) offset between the center of the gauge and the first increment on the horizontal scale.*

Method 2: When Fillet Weld Legs are Smaller Than Fitting Thickness

1. Loosen the locking screw.
2. To measure the length of the vertical leg: Place one foot of the gauge on the pipe. Read the length on the vertical (internal alignment) scale.
3. To measure the length of the horizontal leg: Loosen the locking screw and place the gauge on the pipe. Read the length on the horizontal (fillet weld size) scale in 16ths of an inch or millimeters.
4. *Note: There is a 1/4 inch (5mm) offset between the center of the gauge and the first increment on the horizontal scale.*

3.7. Making Trouble-Free Socket Welds

Follow these steps to ensure proper fit-up for socket welds, minimizing issues.

1. Drive the pipe "home" into the fitting.
2. Scribe a line on the fitting 1/2 inch from the shoulder. Scribe another line on the pipe 3/4 inch from the shoulder of the fitting.
3. Withdraw the pipe 1/8 inch (3mm) using the Hi-Lo gauge to accurately measure the operation.
4. Tack weld the pipe and fitting.
5. Using the Hi-Lo gauge, measure the distance between the scribe lines. The distance should be 1-3/8 inches.
6. Complete the socket weld.

7. After welding, use the gauge to measure the distance between the scribe lines again. The distance should be approximately 1-5/16 inches (34mm).

4. Specifications

Model Name	Hi-lo Gauge
Brand	RIVERWELD
Material	Stainless Steel
Measurement Units	Inches and Metrics
Product Dimensions (L x W x H)	16.5 x 6.7 x 2.45 cm
Item Weight	180 grams
Included Components	Hi-Lo Welding Gauge

5. Maintenance

To ensure the longevity and accuracy of your RIVERWELD Hi-Lo Welding Gauge, follow these maintenance guidelines:

- **Cleaning:** After each use, wipe the gauge clean with a soft, dry cloth to remove any welding spatter, dust, or debris. For stubborn grime, a mild cleaning solution can be used, followed by thorough drying.
- **Lubrication:** Periodically apply a thin coat of light machine oil to the sliding parts to ensure smooth operation and prevent corrosion.
- **Storage:** Store the gauge in its protective case when not in use. Keep it in a dry environment to prevent rust and damage.
- **Calibration:** For critical applications, regular calibration against a known standard is recommended. The gauge can be calibrated according to NBS standards.
- **Handling:** Avoid dropping the gauge or subjecting it to harsh impacts, as this can affect its precision.

6. Troubleshooting

If you encounter issues with your Hi-Lo Welding Gauge, consider the following:

- **Inaccurate Readings:**
  - Ensure the locking screw is tightened securely during measurement.
  - Verify that the gauge is clean and free from debris that might obstruct movement or affect contact points.
  - Check for any visible damage or bending to the gauge components.
  - Confirm that the correct scale (imperial or metric) is selected and properly aligned.
  - Consider recalibration if accuracy issues persist, especially after prolonged use or impact.
- **Stiff Sliding Mechanism:**
  - Clean the sliding surfaces thoroughly to remove any accumulated dirt or grit.
  - Apply a small amount of light machine oil to the sliding mechanism.
- **Difficulty Switching Scales:**

- Ensure the locking screw is fully loosened before attempting to remove or flip the sliding body.
- Check for any obstructions or debris preventing smooth removal/insertion.

For issues not resolved by these steps, please contact RIVERWELD customer support.

7. Warranty and Support

RIVERWELD is committed to providing high-quality products. This gauge is designed for durability and precision. Spare parts are indicated to be available for up to 20 years.
For technical assistance, warranty claims, or further inquiries, please refer to the contact information provided with your purchase or visit the official RIVERWELD website.
Manufacturer: RIVERWELDstore