



Digital Readout System

MODEL H6087-98, H7848-51

INSTALLATION MANUAL



COPYRIGHT © JUNE, 2004 BY GRIZZLY INDUSTRIAL, INC. REVISED DECEMBER, 2010 (TR)
**WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE
OR FORM WITHOUT THE WRITTEN APPROVAL OF GRIZZLY INDUSTRIAL, INC.**
#CA6351 PRINTED IN CHINA



WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

Table of Contents

INSTALLATION	2
Precaution	2
Location Selection	3
Installation Requirements	4
Scale Setup	7
Lathe Installation	9
Dimensions	10
WARRANTY AND RETURNS	13

Manual Accuracy

We are proud to offer this document with your new machine! We've made every effort to be exact with the instructions, specifications, drawings, and photographs of the machine we used when writing this manual. However, sometimes we still make an occasional mistake.

Also, owing to our policy of continuous improvement, **your machine may not exactly match the manual**. If you find this to be the case, and the difference between the manual and machine leaves you in doubt, immediately call our technical support for updates or clarification.

For your convenience, we post all available documentation on our website at **www.grizzly.com**. Any updates to this document will be reflected on our website as soon as complete.

Contact Info

We stand behind our machines. If you have any service questions, parts requests or general questions about the machine, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
E-Mail: techsupport@grizzly.com

We want your feedback on this manual. If you can take the time, please email or write to us at the address below and tell us how we did:

Grizzly Industrial, Inc.
c/o Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

INSTALLATION

Precaution

1. The travel length of the glass scale must be longer than the maximum travel of the machine. There should be at least 10mm of clearance between the ends of the glass scale and the maximum travel of the machine, as shown in **Figure 1**.

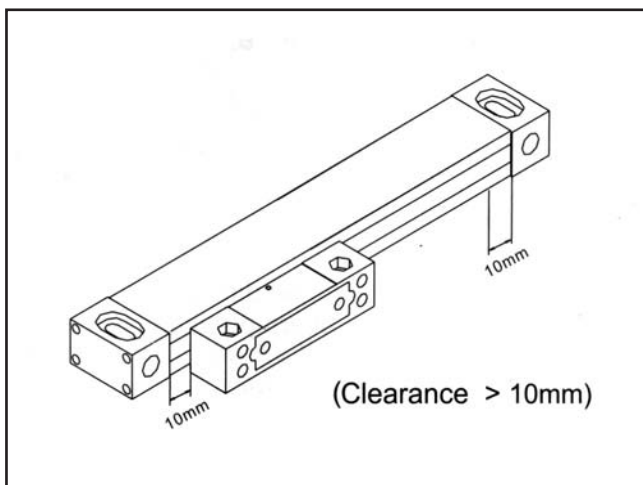


Figure 1. Glass scale clearance.

2. To ensure the reliability of the graduated glass scale, and to avoid any possibility of scale misalignment, the scale should be installed on machined flat surfaces wherever possible. In the case where there are no machined flat surfaces available on the machine, machined flat blocks or the aluminum fillers should be used. Wherever possible, the scale ends and the machine reader head should be installed on a flat surface.

3. Indicators must be set up properly to ensure accurate measurement. Make sure indicator axis is perpendicular to the work. If a vertical dial indicator is used, as in **Figures 2 & 3**, it is important to ensure that the dial indicator is perpendicular to the measured surface to also avoid the cosine measurement error.

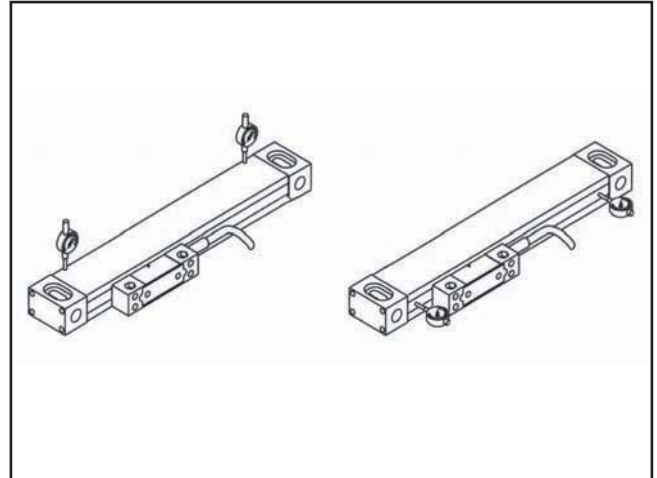


Figure 2. Horizontal scale alignment.

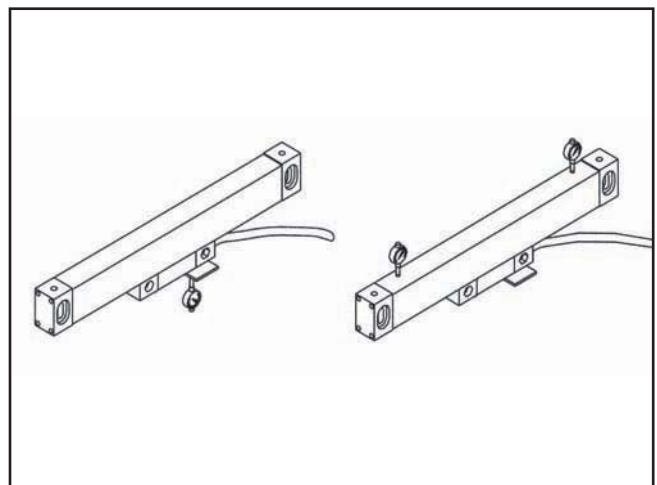


Figure 3. Vertical scale alignment.



Location Selection

To select proper installation locations:

1. Scales should be installed on flat machined surfaces.
2. The opening of the scale must not be installed in direct exposure to metal shavings, oil, water, dust or other foreign objects as illustrated in **Figure 4**. The provided covers should be installed.

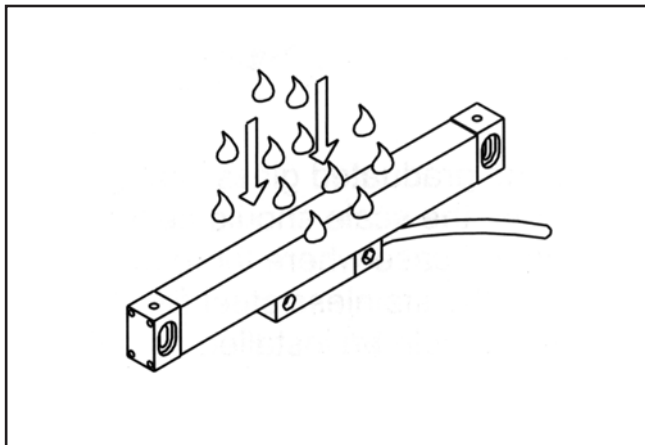


Figure 4. Scale exposure.

3. In cases where machined flat surfaces are not available, an mounting strip or strip should be used to provide a flat surface for the installation. The mounting strip, shown in **Figure 5**, must be as short as possible to provide a rigid surface.

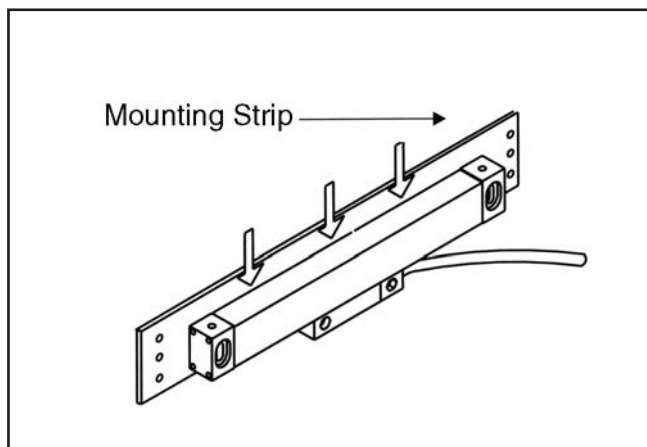


Figure 5. Mounting strip.

4. A clearance of at least $\frac{1}{8}$ " between the scale and scale cover is necessary (**Figure 6**).

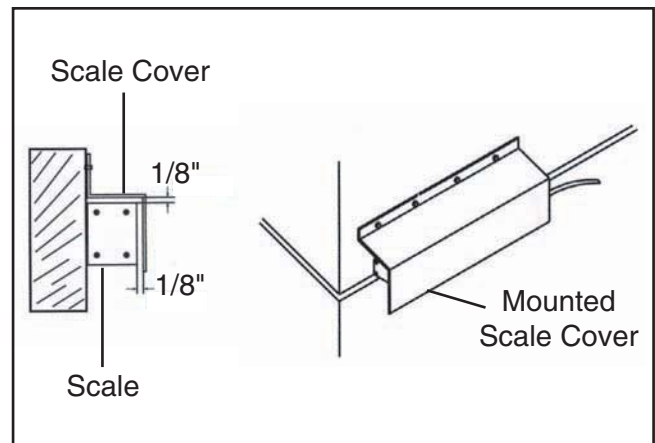


Figure 6. Scale cover clearance.

5. All tapped screw holes must have at least six threads to allow the screw to be firmly secured. For the screw that is needed to secure a heavy load, the tapped holes must have at least eight threads. After tapping, the holes must be deburred and cleaned.
6. All cables must be fixed, but also allow for the maximum machine travel movements. **Figure 7** shows the recommended minimum radius that should be used for bending the scale cable.

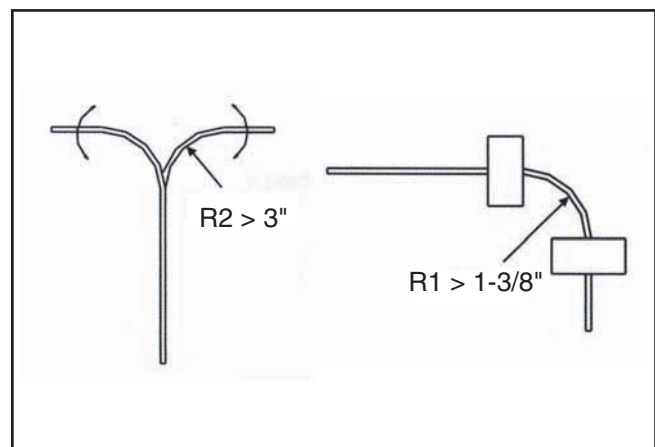


Figure 7. Bending radii.

7. Grounding is very important! Be sure receptacle you plug into is grounded.
8. The horizontal and vertical alignment measurement are taken at 20 mm away from the scale ends, as shown in **Figure 8**.

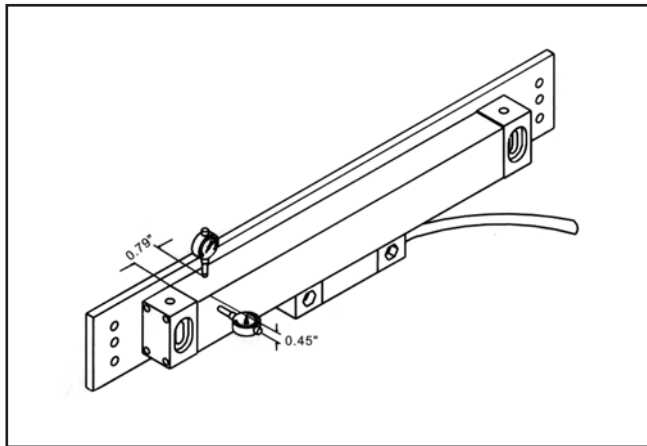


Figure 8. Scale alignment measurements.



Installation Requirements

1. Requirements for the mounting surface:
 - Parallel mounting **Figure 9 & 10**: The parallelism of the two mounting surfaces must be less than 0.1 mm of each other..
 - Perpendicular mounting **Figure 11**: The two mounting surfaces must be less than 0.1 mm out of square.

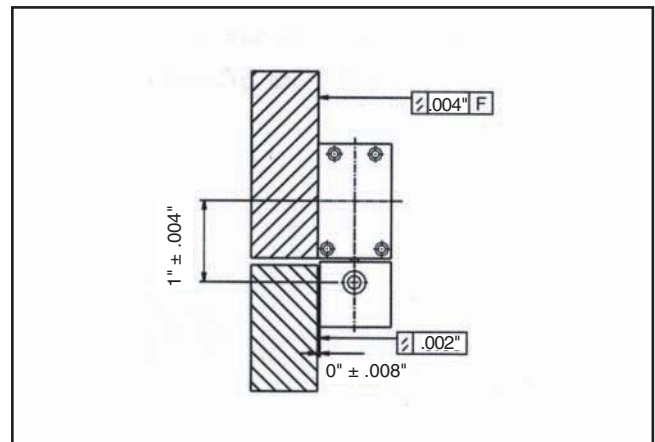


Figure 9. Parallel mounting.

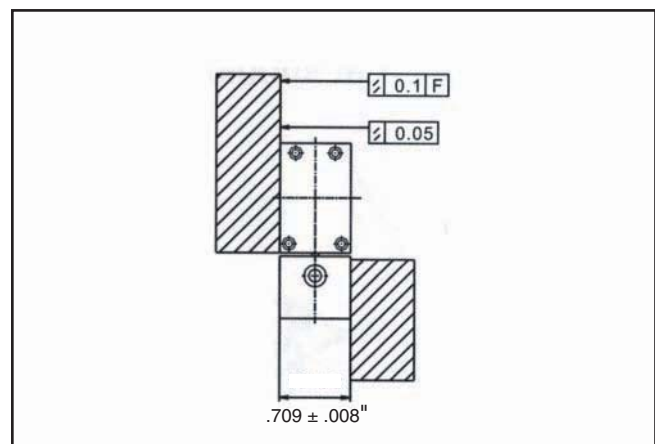


Figure 10. More parallel mounting.

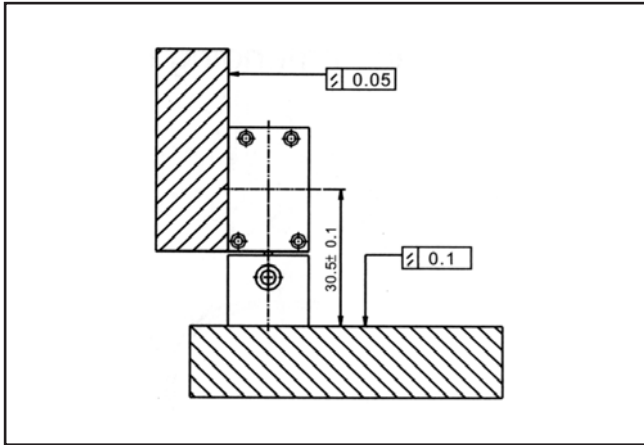


Figure 11. Perpendicular mounting.

2. Scale Alignment:

- For scale travel less than 37.4", the maximum parallel error between the scale and the machine slide must be less than .04", as shown in **Figure 12**.
- For scale travel longer than 37.4" mm (**Figure 13**), the maximum alignment parallelism error must be less than 0.06".

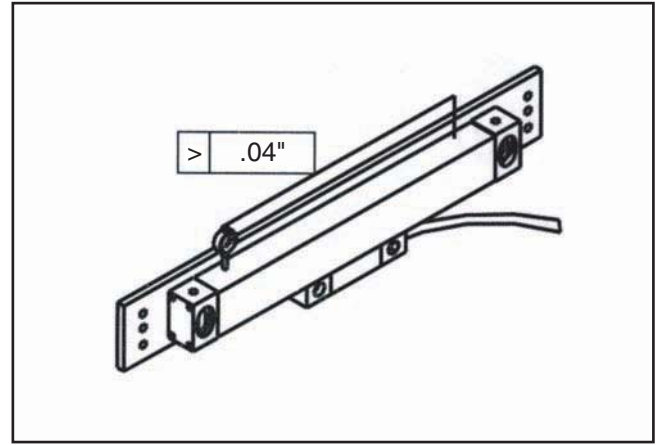


Figure 12. Alignment, less than 37.4" travel.

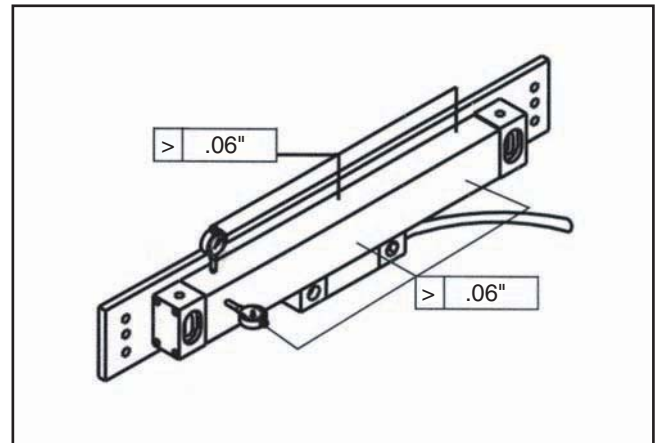


Figure 13. Alignment, more than 37.4" travel.

3. Clearances between the reader head and scale body (**Figure 14**):
- The clearance between the reader head and scale body must be kept between 0.03" - .06".
 - The reader head must be less than .001" parallel with the scale and can be set with feeler gauges to allow the reader head to move unrestricted along the scale.

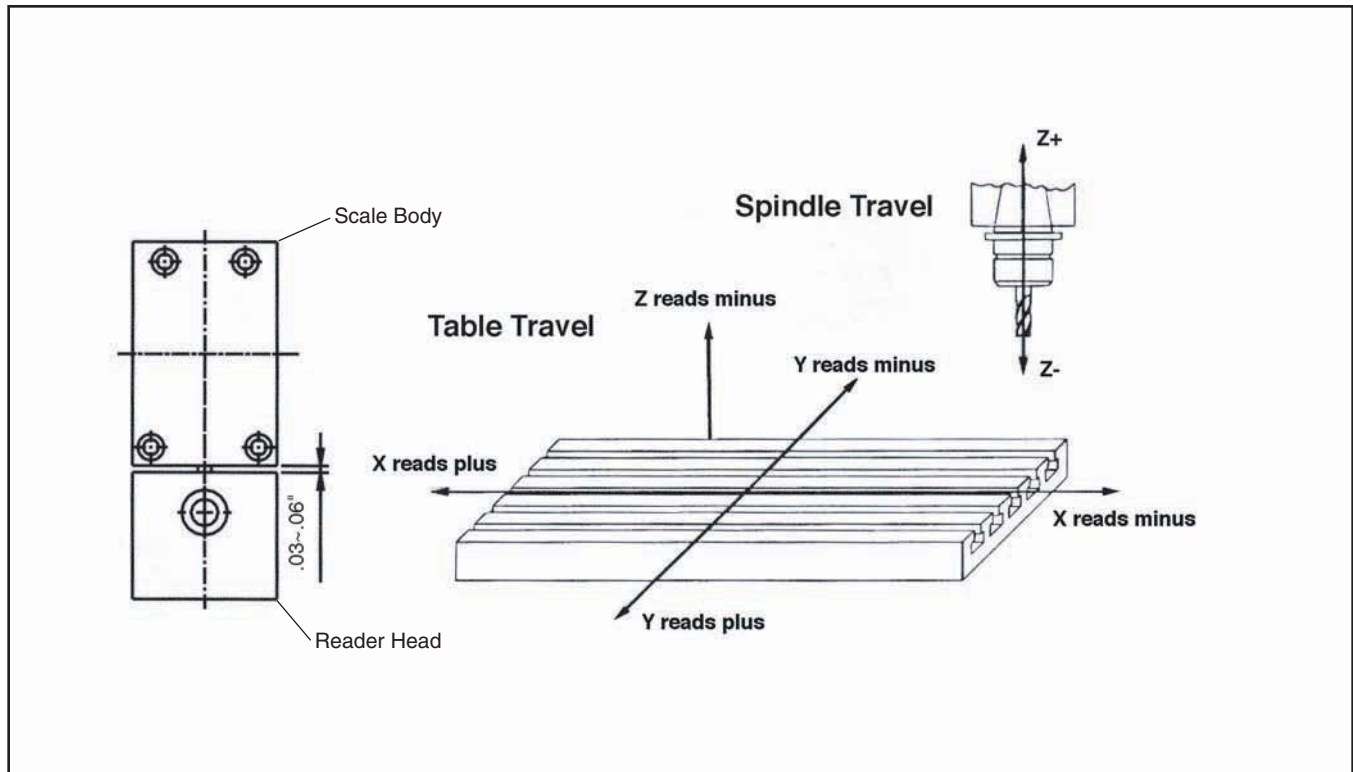


Figure 14. Milling machine table direction and reader head clearance.

Direction on Lathe Installation:

When travelling towards the headstock, the reading should be reduced when the cross slide travels towards the center, the reading should also reduce.

Note:

To give the best protection at all times, the scale should be mounted with the rubber seals facing down.

Where extreme exposure to metal shavings, coolant, dirt and compressed air are present, install the supplied sheet metal cover guards for maximum protection.

Between the scale and the reader head is a blue strip which helps to maintain the correct distance between the reader head and the scale. Remove this after installation.

Scale Reading Direction:

Before fitting the scale, ensure that the reading direction is correct. To change the direction of the scale, turn the scale over.

Generally the scale reads in the correct direction with the label of the scale exposed.

Lathe Scale Installation:

Before fitting the scale, connect the "X" axis to the cross slide to allow the diameter function to work.



Scale Setup

One of the easiest ways to set up an "X" scale on a milling machine is to clamp two parallels to the flat table surface that the table travels on and set the scale on the parallels.

To set up the "X" axis scale:

1. Carefully drill and tap the holes (**Figure 15**) to match the provided screws.

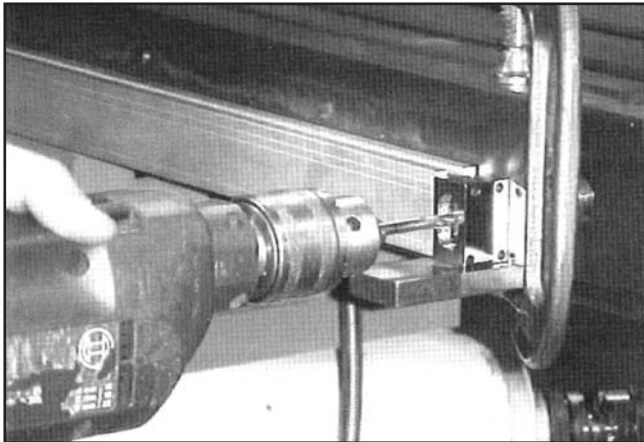


Figure 15. Drilling the screw holes.

2. Mount the cover over the scale and drill and tap holes to secure it to the table, making sure that there is 3mm of clearance between the cover and the scale.
3. Mount the scale on the backing plate using the pre-drilled holes (**Figure 16**), checking that the scale is parallel with the machine slide with a dial indicator.

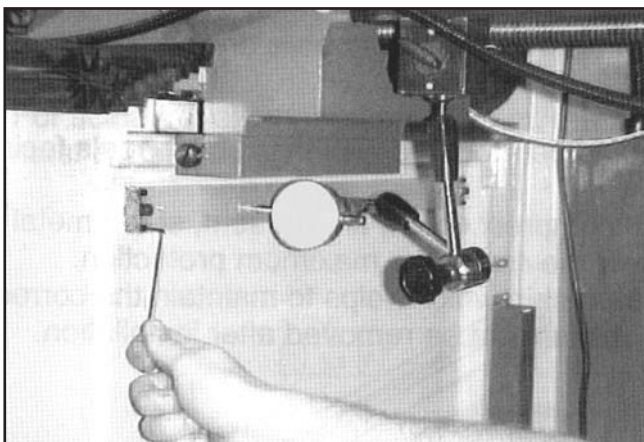


Figure 16. Mounting scale on backing plate.

4. When the scale is mounted, fix the reader head to the saddle. If necessary, shim the head to ensure that it is parallel and in-line with the scales (**Figure 17**). *NOTE: The blue packing between the reader head and scale allows for the correct clearance and holds the reader head parallel to the scale.*

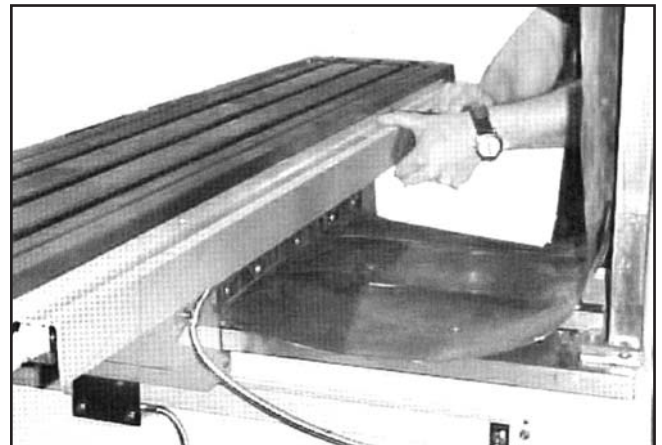


Figure 17. Completing "X" axis scale mounting.

To set up the "Y" axis scale:

1. If the surface is not machined, mount the backing plate and use the set screws to adjust the backing plate. Check with a dial indicator (**Figure 18**), and adjust the backing plate until the scale is square and perpendicular to the machine slides.

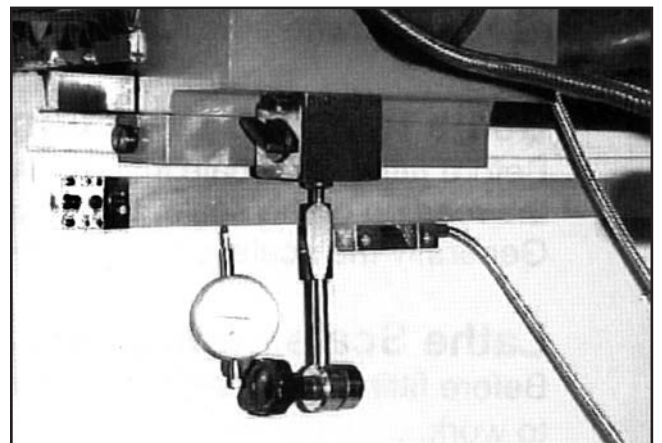


Figure 18. Aligning the backing plate with a dial indicator.

2. Mount the bracket on the saddle (**Figure 19**), to accept the reader head, making sure that the reader head is in-line and parallel to the scale. Secure the cable and leave enough free cable to allow for the travel of the slide.

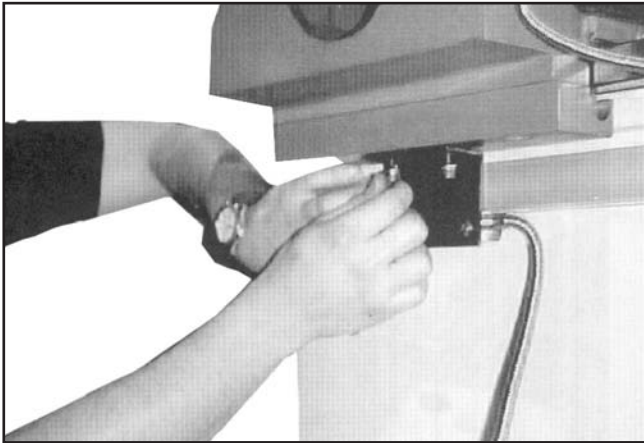


Figure 19. Mounting the bracket to the saddle.

3. After the scale is aligned to the axis, drill and tap the saddle to suit the provided bracket and mount the bracket as shown in **Figure 20**. Ensure the reader head is sitting correctly so when it is attached it will be square and parallel to the scale.

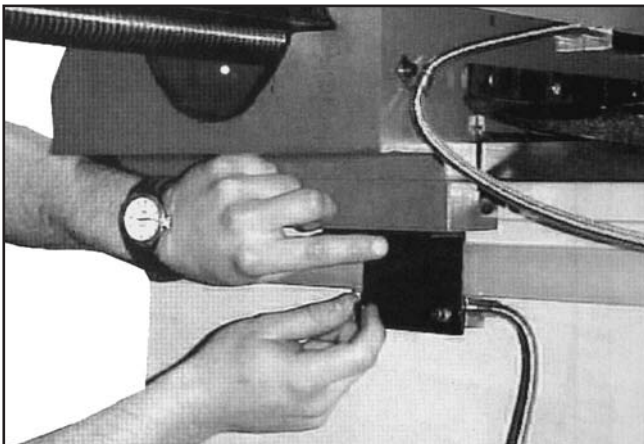


Figure 20. Mounting the provided bracket.

Fitting the "Z" axis scale:

Before mounting the "Z" axis scale, ensure that it will read "+" as you wind the table down, increasing the distance from the table to the cutter.

1. The "Z" axis scale should be installed on the side of the column, ensuring that the open side of the scale is away from the direct metal shavings and coolant and that the travel is in the right direction, "-" towards the spindle and "+" away from the spindle. The bracket should be mounted on the knee (**Figure 21**), and around the scale to allow for the cover to protect the scale (**Figure 22**), where excessive coolant and metal shavings are present.

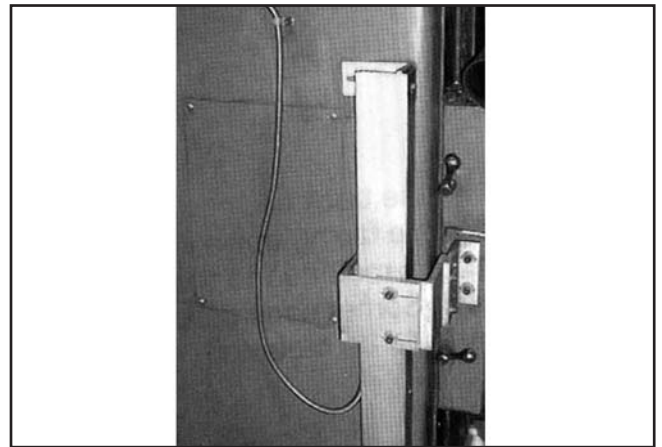


Figure 21. Bracket mounting location.

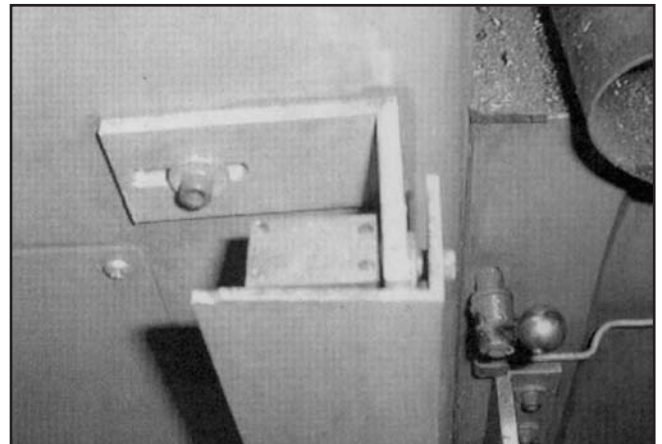


Figure 22. Mounted scale cover.



Lathe Installation

To install readout on a lathe:

1. Mount the scale parallel and square to the slide, shown in **Figure 23**. Testing for parallel can be done with a dial indicator or a precision level.

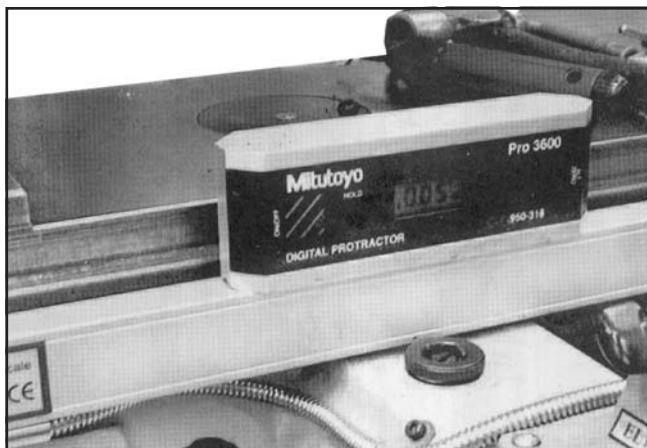


Figure 23. Scale mounting location.

2. Select a flat surface that is suitable and clear of the travelling parts of the lathe and mount the cross slide scale, shown in **Figure 24**.



Figure 24. Flat surface for scale mounting.

3. The longitudinal scale should be mounted on the back of the lathe, (**Figure 25**) with the open side of the scale facing down, and must be parallel to the bed.

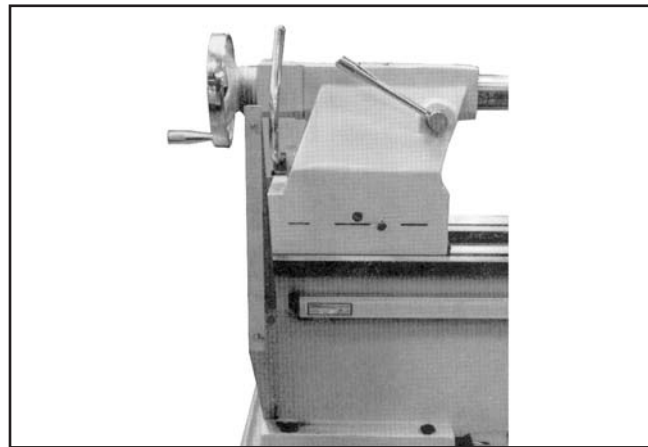


Figure 25. Longitudinal scale mounting on lathe.

4. Mount the reader head to the saddle with the provided brackets (**Figure 26**). Modification may be required for some lathes. Mount covers over the slides as shown in **Figure 27**.

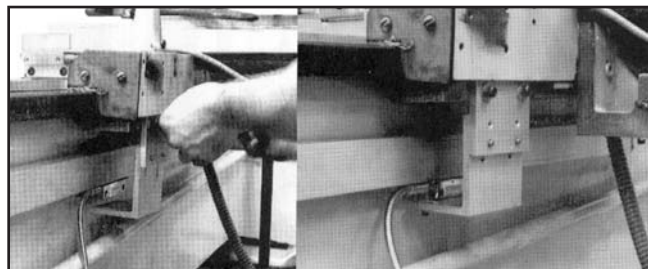


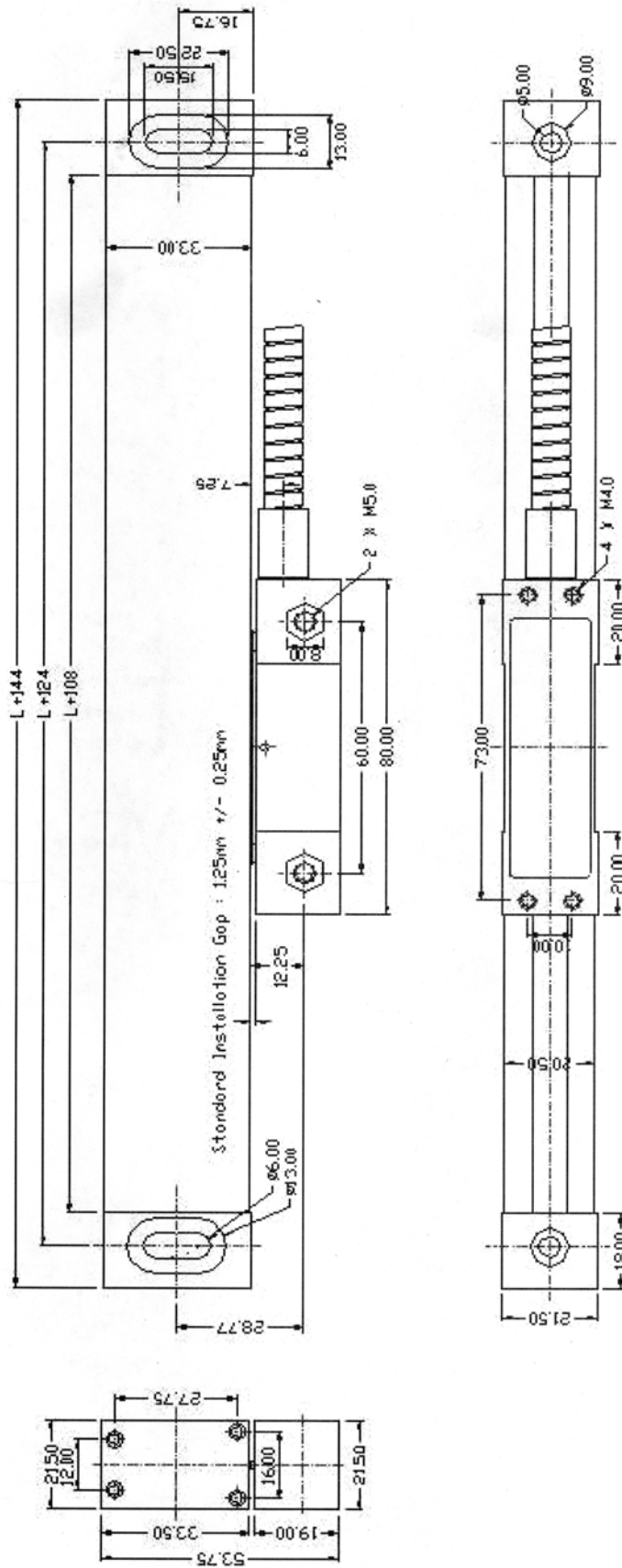
Figure 26. Proper reader head mounting with provided brackets.



Figure 27. Slide cover mounting.



Dimensions





WARRANTY CARD

Name _____
Street _____
City _____ State _____ Zip _____
Phone # _____ Email _____ Invoice # _____
Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. **Of course, all information is strictly confidential.**

1. How did you learn about us?

_____ Advertisement _____ Friend _____ Catalog
_____ Card Deck _____ Website _____ Other: _____

2. Which of the following magazines do you subscribe to?

_____ Cabinetmaker & FDM	_____ Popular Science	_____ Wooden Boat
_____ Family Handyman	_____ Popular Woodworking	_____ Woodshop News
_____ Hand Loader	_____ Precision Shooter	_____ Woodsmith
_____ Handy	_____ Projects in Metal	_____ Woodwork
_____ Home Shop Machinist	_____ RC Modeler	_____ Woodworker West
_____ Journal of Light Cont.	_____ Rifle	_____ Woodworker's Journal
_____ Live Steam	_____ Shop Notes	_____ Other: _____
_____ Model Airplane News	_____ Shotgun News	
_____ Old House Journal	_____ Today's Homeowner	
_____ Popular Mechanics	_____ Wood	

3. What is your annual household income?

_____ \$20,000-\$29,000 _____ \$30,000-\$39,000 _____ \$40,000-\$49,000
_____ \$50,000-\$59,000 _____ \$60,000-\$69,000 _____ \$70,000+

4. What is your age group?

_____ 20-29 _____ 30-39 _____ 40-49
_____ 50-59 _____ 60-69 _____ 70+

5. How long have you been a woodworker/metalworker?

_____ 0-2 Years _____ 2-8 Years _____ 8-20 Years _____ 20+ Years

6. How many of your machines or tools are Grizzly?

_____ 0-2 _____ 3-5 _____ 6-9 _____ 10+

7. Do you think your machine represents a good value?

_____ Yes _____ No

8. Would you recommend Grizzly Industrial to a friend?

_____ Yes _____ No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?

Note: We never use names more than 3 times.

_____ Yes _____ No

10. Comments: _____

FOLD ALONG DOTTED LINE



Place
Stamp
Here



GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069



FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

grizzly.com®

TOOL WEBSITE

Buy Direct and Save with Grizzly® – Trusted, Proven and a Great Value!
~Since 1983~

*Visit Our Website Today For
Current Specials!*

**ORDER
24 HOURS A DAY!
1-800-523-4777**

