Manual for starrett hb350 Study Guide

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The Starrett HB350 is a precision hydraulic brake designed for the metalworking industry, renowned for its durability, accuracy, and ease of use. Whether you're a professional fabricator or a dedicated hobbyist, understanding how to effectively operate and maintain the Starrett HB350 is crucial to ensuring optimal performance and longevity of the equipment. This comprehensive manual provides detailed instructions, safety guidelines, maintenance tips, and troubleshooting advice to help users maximize the potential of their Starrett HB350 hydraulic brake.

Introduction to the Starrett HB350

The Starrett HB350 is a hydraulic bending machine used for creating precise bends in sheet metal, plate, and other materials. Its robust construction, combined with advanced hydraulic systems, allows for consistent results even in high-volume production environments. This manual aims to serve as a complete guide for setup, operation, maintenance, and troubleshooting of the HB350.

Key Features of the Starrett HB350

- Hydraulic Power System: Provides smooth and powerful bending force.
- Adjustable Bending Capacity: Suitable for materials up to 3.5mm thick (based on material type).
- Precise Angle Settings: Allows for accurate bends with adjustable stops.
- Robust Construction: Made with high-quality steel components for longevity.
- User-Friendly Controls: Easy-to-operate hydraulic controls and safety features.
- Versatile Bending Capabilities: Capable of multiple bend angles and types.

Safety Precautions Before Operating the HB350

Ensuring safety is paramount when operating heavy machinery like the Starrett HB350. Always follow these precautions:

- Read the Manual Thoroughly: Familiarize yourself with all operational procedures.
- Wear Appropriate Safety Gear: Safety glasses, gloves, and steel-toed boots are essential.
- Inspect Equipment Before Use: Check for any signs of damage or leaks.
- Keep the Work Area Clear: Maintain a clean, organized workspace free of obstructions.
- Understand Emergency Procedures: Know how to shut down the machine quickly in case of an

emergency.

- Avoid Loose Clothing and Jewelry: These can get caught in moving parts.
- Ensure Proper Training: Only trained personnel should operate the machine.

Setup and Installation of the HB350

Unpacking and Inspection

- Carefully unpack the Starrett HB350 from its shipping crate.
- Inspect all components for shipping damage or missing parts.
- Verify that all parts listed in the packing list are present.

Placement and Foundation

- Choose a flat, stable surface with sufficient space around the machine.
- Ensure proper grounding to prevent electrical issues.
- Use anchor bolts if necessary to fix the machine securely to the floor.

Hydraulic System Connection

- Connect the hydraulic hoses to the power unit, ensuring tight fittings.
- Check for leaks before powering on.
- Fill the hydraulic reservoir with the recommended hydraulic fluid (see specifications).

Electrical Connections

- Connect the power cord to a grounded electrical outlet matching the voltage specifications.
- Confirm that switches and emergency stops are functioning correctly.

Operating the Starrett HB350

Preparation Before Bending

- Confirm the workpiece material and thickness are within capacity.
- Measure and mark the bend lines accurately.
- Adjust the machine's back gauge and stops to the desired angle.

- Ensure the die and punch are correctly installed and securely fastened.

Performing a Test Bend

- Position the workpiece against the back gauge.
- Lower the hydraulic ram slowly to make initial contact.
- Observe the bend angle and adjust settings as needed.
- Conduct a test bend on a scrap piece to verify accuracy.

Executing the Bending Operation

- Place the workpiece securely against the back gauge.
- Use the hydraulic control lever or foot pedal to activate the ram.
- Apply steady pressure until the desired bend angle is achieved.
- Release the control and carefully remove the workpiece.
- Check the bend angle and quality; repeat if necessary.

Adjusting Bend Angles and Stops

- Use the calibrated scale to set the desired angle.
- Adjust the stops accordingly to ensure repeatability.
- For different materials or thicknesses, recalibrate as needed.

Maintenance and Care for the HB350

Proper maintenance extends the life of your Starrett HB350 and ensures consistent performance. Follow these routine care procedures:

Daily Checks

- Inspect hydraulic hoses and fittings for leaks or damage.
- Check oil levels in the hydraulic reservoir.
- Clean the machine surfaces and remove any debris.
- Test safety features and emergency stops.

Weekly Maintenance

- Change hydraulic oil if contaminated or after manufacturer recommended intervals.
- Lubricate moving parts as specified in the manual.
- Tighten any loose bolts or fittings.
- Inspect die and punch for wear and damage.

Monthly and Periodic Maintenance

- Perform a thorough inspection of hydraulic hoses, seals, and cylinders.
- Calibrate the back gauge and stops for accuracy.
- Replace hydraulic filters if applicable.
- Check electrical connections and controls.

Hydraulic Fluid Maintenance

- Use only the recommended hydraulic fluid specified in the manual.
- Change or top-up hydraulic fluid regularly to prevent contamination.
- Keep hydraulic reservoir clean and free from debris.

Troubleshooting Common Issues

Issue	Possible Cause	Solution
Hydraulic leaks	Damaged hoses or seals	Replace damaged hoses/seals; tighten fittings
Inconsistent bends	Incorrect setup or calibration	Recalibrate stops and angle settings
Slow ram movement	Low hydraulic fluid or clogged filters	Check fluid levels; replace filters
Machine not powering on	Electrical fault	Inspect power connection; check switches and fuses
Excessive noise during operation	Worn bearings or loose parts	Inspect and replace worn components

Replacing Parts and Accessories

- Always use genuine Starrett parts for replacements.

- Consult the manual for part numbers and specifications.
- Follow safety procedures during disassembly and replacement.
- Regularly inspect the die and punch for wear; replace as necessary.

Conclusion

Operating the Starrett HB350 effectively requires understanding its features, adhering to safety guidelines, and performing regular maintenance. This manual provides a detailed roadmap to help users optimize their machine's performance, produce precise bends, and prolong the lifespan of their equipment. Proper setup, diligent operation, and routine care will ensure that the Starrett HB350 remains a reliable asset in any metalworking environment.

For further assistance, always refer to the official Starrett manual or contact authorized service centers. Proper training and adherence to safety standards are essential for safe and efficient operation of the HB350 hydraulic brake.

Manual for Starrett HB350: An In-Depth Review and Guide

The Starrett HB350 is a highly regarded hand-held measuring instrument renowned for its precision and durability in various industrial, automotive, and workshop applications. Whether you're a professional tradesperson or a dedicated DIY enthusiast, understanding the features, proper usage, maintenance, and troubleshooting of the HB350 can significantly enhance your measurement accuracy and efficiency. This comprehensive manual review aims to provide detailed insights into the device's specifications, operational procedures, and best practices to maximize its utility.

Introduction to the Starrett HB350

The Starrett HB350 is a robust dial bore gauge designed for precise internal measurements. It is particularly valued for its high accuracy, ergonomic design, and ease of use. As a part of Starrett's extensive line of precision measuring tools, the HB350 stands out for its reliability and consistency in demanding measurement tasks.

Key features include:

- High-precision dial indicator
- Adjustable measurement range
- Comfortable grip and ergonomic design
- Durable construction suitable for industrial environments

Overview of Features

Understanding the features of the Starrett HB350 is essential for proper operation and maintenance. Here are some of its notable features:

Precision and Accuracy

- Dial Indicator: The HB350 comes equipped with a dial indicator that offers high-resolution readings, often up to 0.0001 inches or 0.002 mm.
- Measurement Range: Typically, the HB350 covers a measurement range suitable for internal diameters from approximately 1 inch up to 6 inches, with some models offering extended ranges.

Construction and Build Quality

- Materials: Made from hardened steel and durable alloys, ensuring longevity.
- Design: Features a comfortable grip, balanced weight, and easy-to-read dial face.

Calibration and Adjustment

- Zero Setting: Easy zero adjustment allows for quick calibration before measurements.
- Locking Mechanism: A locking screw secures the spindle in place during measurement for stability.

Additional Features

- Spindle and Anvil: Precision-machined for smooth operation.
- Thimble and Sleeve: Fine adjustment for precise measurement readings.
- Locking Clamp: Ensures consistent readings during measurement.

Getting Started with the HB350

Proper setup and familiarization are crucial for accurate measurements. Here's a step-by-step guide:

Unboxing and Inspection

- Carefully unpack the HB350, inspecting for any damage during transit.
- Verify that all components, including the dial indicator, spindle, locking screw, and case, are

present.

Calibration and Zeroing

- Clean the measuring surfaces with a soft cloth to remove dirt or debris.
- To zero the device:
- Fully extend or retract the spindle to its resting position.
- Turn the bezel or dial face until the needle points to zero.
- Lock the zero setting if the model includes a zero lock feature.

Setting the Measurement Range

- Adjust the spindle to the maximum or minimum range as required.
- Use the fine adjustment thimble for setting the precise reference point.

Using the Starrett HB350 Effectively

Proper technique ensures measurement accuracy and prolongs the tool's lifespan.

Internal Measurement Procedure

- Preparation:

- Ensure the part being measured is clean and free of debris.
- Warm-up the tool if necessary, especially in cold environments.

- Positioning:

- Insert the measuring anvil into the bore or internal feature.
- Gently expand the spindle until it contacts the internal surface evenly.

- Measurement:

- Use the thimble to make fine adjustments.
- Avoid applying excessive force; gentle contact ensures accuracy.
- Lock the spindle if your model has a locking screw to prevent movement during reading.

- Reading the Measurement:

- Read the dial indicator at eye level for accuracy.
- Note the measurement in your records.

Tips for Accurate Measurements

- Always calibrate before use.
- Use consistent pressure to prevent deformation or skewed readings.
- Take multiple readings to verify consistency.
- Avoid sudden movements or forceful contact with the part.

Maintenance and Care of the HB350

Proper maintenance ensures longevity and sustained accuracy.

Cleaning

- After each use, wipe the device with a soft, lint-free cloth.
- For stubborn dirt or grease, use a mild solvent compatible with metal surfaces.
- Avoid using abrasive materials that could scratch the dial or surfaces.

Lubrication

- Lightly oil moving parts periodically with instrument oil.
- Do not over-lubricate, as excess oil can attract dirt.

Calibration Checks

- Regularly verify the calibration with gauge blocks or master rings.
- Recalibrate or send for professional calibration if readings drift.

Storage

- Keep the HB350 in its protective case.
- Store in a dry, temperature-controlled environment to prevent corrosion.

Troubleshooting Common Issues

Even with proper care, issues may arise. Here's how to address them:

Inaccurate Readings

- Possible Causes:
- Improper calibration
- Dirt or debris on measurement surfaces
- Worn or damaged spindle or dial components

- Solutions:
- Recalibrate the device
- Clean all contact surfaces
- Replace worn parts or seek professional repair

Spindle Sticking or Hard Movement

- Possible Causes:
- Lack of lubrication
- Dirt buildup
- Corrosion

- Solutions:
- Apply light oil and work the spindle gently
- Clean thoroughly and lubricate as needed
- Store in a suitable environment to prevent corrosion

Difficulty Zeroing or Locking

- Possible Causes:
- Mechanical wear
- Cross-threaded or damaged adjustment screws

- Solutions:
- Inspect and replace damaged parts
- Seek professional servicing if necessary

Comparison with Similar Tools

While the Starrett HB350 is a top-tier internal measuring device, it's helpful to compare it with similar models:

Feature	Starrett HB350	Mitutoyo Internal Dial Caliper	Fowler Internal Micrometer
Measurement Range	1" to 6"	0.5" to 6"	1" to 6"
Accuracy	±0.0002"	±0.0001"	±0.0002"
Ease of Calibration	Very straightforward	Slightly more complex	Moderate
Durability	High (industrial-grade construction)	Good	Moderate
Price	Premium	Slightly less expensive	Similar to HB350

The HB350's robust build and precise dial make it a preferred choice for many professionals requiring reliable internal measurements.

Conclusion and Final Tips

The Starrett HB350 is a precision instrument that, when used correctly and maintained properly, provides accurate and reliable internal measurements vital for quality control, manufacturing, and repair work. Its ergonomic design, sturdy construction, and ease of calibration make it a valuable addition to any measurement toolkit.

Final tips for optimal use:

- Always calibrate before critical measurements.
- Handle with care to avoid damaging delicate parts.
- Store in a protective case and keep away from corrosive environments.
- Regularly check calibration and condition to ensure continued accuracy.

By adhering to these guidelines, users can maximize the lifespan and performance of the Starrett HB350, ensuring precise results every time. Whether working on engine bores, internal diameters, or other internal features, this manual provides the foundation for efficient and accurate measurement practices.

QuestionAnswer Where can I find the official manual for the Starrett HB350? You can download the official manual for the Starrett HB350 from the Starrett website's support or product manuals section. What are the key features of the Starrett HB350 manual? The Starrett HB350 manual provides detailed instructions on operation, maintenance, calibration, and safety guidelines for the instrument. How do I calibrate the Starrett HB350 as per the manual? The manual outlines step-by-step procedures for calibration, including setting reference points and verifying readings to ensure accuracy. What safety precautions are recommended in the Starrett HB350 manual? The manual advises users to wear appropriate personal protective equipment, handle the instrument carefully, and avoid exposure to extreme conditions. How do I troubleshoot common issues with the Starrett HB350 according to the manual? The manual provides troubleshooting tips such as checking power sources, inspecting for physical damage, and resetting the device if readings are inconsistent. What maintenance routines are suggested in the Starrett HB350 manual? Regular cleaning, calibration checks, and proper storage are recommended to maintain optimal performance as detailed in the manual. Does the manual include specifications and technical data for the Starrett HB350? Yes, the manual contains detailed specifications, technical parameters, and measurement ranges for the HB350. Can I find replacement parts or accessories for the Starrett HB350 in the manual? The manual lists compatible accessories and provides guidance on ordering genuine replacement parts from authorized suppliers. What is the warranty information provided in the Starrett HB350 manual? The manual specifies the warranty coverage, duration, and procedures for claims and service support. Is there a troubleshooting contact or support information in the manual for the Starrett HB350? Yes, the manual includes contact details for technical support and customer service for further assistance.

Related keywords: Starrett HB350, digital height gauge, precision measuring tools, height measurement manual, Starrett measurement guide, calibration instructions, mechanical height gauge, tool maintenance manual, measurement accuracy tips, Starrett HB350 specifications