



SINCE 1872

1400 Sampling Station

Machine Manual

Installation, Operation, Maintenance

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Notice of suitability.

Holmes Bros. Technologies, LLC strives to build the most robust equipment that suits our customers. If at any time a piece of equipment isn't capable to meet the needs of the industry, we want to know about it and determine the correct course of action. Our goal is to be a partner with our customers and understand their processes and environments.

In today's global marketplace, there are many standards and acceptable practices. Our machines will operate in a variety of them. Unfortunately we won't be fluent in them all. Therefore, although we can recommend a machine that will work in a given application, we cannot guarantee the suitability of our machines beyond the designed function.

During the purchase of your machine from one of our distributors, you should have been asked to supply your input power and application. Please take special consideration at this time to make sure the equipment you received is suitable for your application before use. Verify that the machine is configured for your power supply and has the correct screen plates. Please inform us of any discrepancy so that we may discuss it with our distributor.

Welcome to the HBLLC family.

Thank you for choosing Holmes Bros. Technologies, LLC. If this is your first piece of Holmes equipment, we're pleased to be chosen as a supplier that can meet your needs. We know that in today's market the choices seem endless and it is hard to tell the difference between the real thing and the imitators. Since 1872, Holmes has survived the test of time by producing quality equipment for the mining and laboratory industry to be used in the harshest environments. The equipment has changed over time to stay competitive, but is built as durable today as ever. You will know our machines are the real thing when they are put to the test.

At Holmes Brothers Technologies, LLC, we're committed to working with you to understand your goals and how we can best assist you to meet them. In this packet is a Product Registration Card. Please take the time to fill out this card and return it to the address printed on the back. We enter this information and any other comments you may have into our database. This way, we can always know what equipment you have and maintain the history on it as time goes by. Many of our machines run for decades and we are happy to record the details so we can be ready to assist you. Please retain the information provided for replacement parts and maintenance or troubleshooting your equipment. In the event that you need us, our customer service group will be happy to answer any questions about our products. Please ask about our automatic maintenance reminder program.

Thank you again for choosing Holmes Brothers Technologies, LLC. Please contact your distributor for pricing and availability on any of our products or parts. If you have any requests or suggestions regarding our products, please send them to the address listed on the last page of this manual. We will give your opinions our sincere consideration. We realize that our continued success depends largely on your success. Thank you and best of luck.

Machine Installation

The 1400 has been designed to meet your needs with a minimum of installation work. However, due to the wide range of environments that our machines go into, here are a few tasks before turning on the machine.

1. Inspect the packaging and/or skid the machine arrived on for damage during transit. Photograph any signs of damage.
2. Remove the box/packaging and discard. Report any sign of damage immediately to your sales representative.
3. The machine is now ready to be wired.

Note: A qualified electrician should wire the machine to meet the electrical codes that govern your site. Holmes Bros. Technologies, LLC will not take responsibility for errors made during this step. A wiring diagram has been supplied as a guide only. Be sure that the machine wiring is consistent with the input power that you specified at the time of order.

4. Due to the wide range on international, regional, local, and intercompany wiring practices, the machine is supplied with only the power cord. Please refer to your specific regulations to safely wire the machine for your site.

Other considerations regarding this machine include the health, safety, and ergonomic requirements of the operator.

1. The machine should be placed in an environment that allows the operator fresh air free of suspended dust. The fresh air should flow from the operator to the machine.
2. The machine should be placed in an environment that is free of trip/fall hazards or wet conditions.
3. The machine should be placed so that the operator can work with the machine without excessive bending, reaching, or in tight spaces.
4. All regulations regarding appropriate PPE should be strictly adhered to.

5. Operators should be well trained on the proper use of the machine and the hazards present. This training should be documented and periodically updated.
6. The machine should be set and operated on a surface that is suitable to hold the weight and vibration of the machine.
7. The machine must be kept dry and not exposed to ambient temperatures above 100 °F.
8. The machine must be dusted off to prevent combustible layers from building that could potentially create a fire hazard.

Machine Operation

The 1400 is a simple machine to operate. It has a simple ON/OFF operation and timing feature in the event that intermittent operation is desired. However, as with all machines there are other things to consider before operating.

1. The inside of the machine is free of paint in order to prevent ongoing contamination of samples. However, there is a light coating of rust preventative present. Initial samples will wear this coating off and leave a bare metal surface that will not affect your sample.
2. Refer to your lab policies on the number of discard samples that should be run before using the machine for test readings.

During operation.

1. Ensure that the guards are installed. Do not operate machine with guards removed.
2. Select OFF on the Splitter selector switch.
3. Press the START button to start the belt.
4. Verify that the belt is running the correct direction.
5. Allow the belt to run for a few minutes and verify the tracking is properly set. If not proceed to the Belt Alignment section in this manual.
6. Splitter operation. The splitter can be operated using automatic, which means the splitter cycles continuously; or by selecting dwell the splitter will cycle and then pause for a period set on the timer between cycles.

Note: The splitter takes two splits per cycle.

- a. Automatic. Select AUTO on the selector switch and press the START button again to start the splitter.
- b. Dwell. Select dwell on the selector switch. The timer will take over control and operate the splitter. The dwell time out of the product stream is based on the time set on the dial.

Note: Compare the timer against a stop watch periodically. Differences in input voltage and/or frequency will affect the timer.

2. Press the STOP button at any time and the machine will stop all motion of the splitter and belt.

Machine Maintenance

Congratulations on your purchase. The 1400 is a relatively maintenance free machine. Periodic lubrication of bearings is required. Perishable and wear parts are made from quality certified steels and coatings to provide long life. OEM parts are available through your distributor and are easy to replace using the correct tools. The 1400 is designed to operate for many years. The bulk of the castings and structure allow for several rebuilds and updates. Therefore, over time you will come across more detailed maintenance tasks in order to keep your machine operating at peak efficiency. The following are some of the more detailed items.

Note: These tasks are for skilled mechanics and will require a larger number of tools.

Note: All hazards and sources of energy must be neutralized before maintenance steps are performed.

Belt Alignment

1. The belt tracking is adjusted by using the two take-up assemblies on either side of the machine. The difference of the take-ups will push the belt to one side or the other. The amount of thread sticking out of the nut is one way to measure the difference and establish a “home” position. Each belt will adjust differently and require adjustment over time as the belt stretches.

Belt Change

1. Remove the two small plates at the lower end of the conveyor on each side directly above the lower bearing.
2. Remove the product chute, top and side guards, door, and splash guard.
3. Index the belt so that the seam is lined up with the slot on the lower plates holding the lower roller.
4. Record the number of threads sticking out of the nut on each take-up frame. Release tension on the belt by backing off the take-up frames.

5. Using vise grips, remove the locking pin holding the belt together or cut the belt if it is no longer usable, and pull the old belt out of the machine.
6. Thread the new belt into the machine and reassemble the machine in reverse order of disassembly.
7. Set the initial tracking from the previous setting.
8. Run the belt and adjust the belt position as needed.

Lubrication

1. Lubricate all bearings weekly with medium grade grease.
2. Check gearbox lubricant quarterly. Change lubricant bi-annually using Mobil 600W Super Cylinder (or equivalent).
3. Lubricate chains monthly using light oil.

Splitter Chain Adjustment

1. Remove the front and rear guards from the splitter drive unit on top of the machine.
2. Loosen the idler sprocket base bolts.
3. Loosen or tighten the chain slack by turning the adjustment nut extending outside the splitter side plate. The chain should have 1/4" to 1/2" play in the center.

Note: Do not run the splitter with the chain pulled tight.

4. Tighten the idler sprocket base bolts.
5. Replace the side guards.

Maintenance frequency chart

Part	Description	Frequency (hrs of use)
1400-21	Take-Up Frame	2000
1400-27	Conveyor Belt	2000
P006	Belt Bearing	6000
800-5	Splitter Bearing	6000

Troubleshooting

Note: Troubleshooting should only be performed by a qualified technician familiar with the machine operation and adjustment. Certain tasks can be performed with guarding removed to aid in diagnosis and extreme care should be taken to prevent injury.

1. The splitter runs continuously in dwell mode.
 - a. Adjust the timer to a higher dwell setting.
 - b. While the splitter is running, look at the back of the proximity switch to the left of the control box and determine if the switch is lighting on and off.
 - c. If the switch is lighting on and off, then the switch is detecting the splitter and the timer is not working properly. If the switch does not light on and off, the switch needs adjusted to detect the splitter.
 - d. Remove power to the machine and remove the splitter front guard. Verify that the splitter position bracket is tight. If not, remove the splitter motor fan guard and rotate the motor via the fan until the splitter is as close to the switch as it will get. Replace the motor fan cover. Tighten the bracket so that the face of the bracket is 1/2" from the proximity switch.
 - e. Restore power to the machine and operate in dwell mode. If the switch still does not light on and off, stop the machine and loosen the outside proximity switch nut by one turn and tighten the inside proximity switch nut by one turn. This will move the proximity switch towards the bracket. Continue this procedure until the switch lights on and off and the dwell cycle operates or the switch and bracket are within 1/4".
 - f. If the dwell cycle begins working correctly, move the switch towards the bracket by one extra turn of the nut. If the switch and bracket are within 1/4" and the switch still does not light on and off, contact your distributor for a new proximity switch.

2. Machine does not run.
 - a. Verify that incoming power is on and correct.
 - b. Verify that thermal overloads are not tripped.
2. Machine will not reset.
 - a. Verify that incoming power is on and correct.
 - b. Verify that thermal overloads are not tripped.
3. Machine is louder than when new.
 - a. One or more bearings may need replaced.
 - b. The splitter may be out of alignment.
4. The motors are hot when machine is running.
 - a. Verify that incoming power is correct.
 - b. Replace the starter.
5. The belt doesn't turn when the machine is on.
 - a. The belt motor thermal overload is tripped.
 - b. The drive chain or gearbox is broken.
 - c. The sprockets have sheared the drive keys.
 - d. The belt motor is bad.
6. The machine doesn't split the product.
 - a. The timer or splitter controls are out of adjustment.
 - b. The splitter motor thermal overloads are tripped.
 - c. The splitter may be jammed.
 - d. The gearbox on the motor is broken.



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