WELCOME to the family of Challenge® users. Challenge has been developing and manufacturing Graphics Arts Equipment for over 100 years and is today one of the world's leading producers and distributors of Paper Cutters, Paper Drills and Bindery Equipment.

SAFETY ALERT! This symbol means CAUTION OR WARNING: Personal safety instructions! Pay special attention to the instructions in bold type. Personal injury may result if the precautions are not read and followed. See SAFETY PRECAUTIONS, page v.

• This machine is designed for ONE PERSON OPERATION ONLY!
• Always DISCONNECT THE POWER before working on this machine.
• DO NOT OPERATE WITH ANY GUARDS REMOVED! Replace all guards before operating.
• CRUSH HAZARD - Keep hands, hair, cleaning rags, & loose clothing away from drills.

READ THIS MANUAL BEFORE OPERATING! Follow precautions and instructions given and you should have years of trouble-free operation. If after reading the manual questions still remain, contact your Authorized Challenge Dealer.

FOR PARTS AND SERVICE contact the Authorized Challenge Dealer from whom you purchased your machine. Use the illustrations and parts lists at the back of this manual to identify the correct parts needed. Always give the SERIAL NUMBER and MODEL of your machine to insure that the correct parts are sent as soon as possible.

Take a few minutes right now to RECORD YOUR MACHINE SERIAL NUMBER in the space provided on the front cover of this manual. Also be sure to fill out the warranty card accompanying this manual and return it DIRECT TO CHALLENGE.

If you bought a used machine, it is important to have the following information on record at Challenge. Copy this page, fill in the information and send it care of: The Challenge Service Department, 6125 Norton Center Drive, Norton Shores, MI 49441-6081.

CHALLENGE MODEL

SERIAL NUMBER

ATTN

COMPANY

ADDRESS

CITY

STATE

ZIP

PHONE

DATE INSTALLED

DEALER'S NAME AND CITY

WARRANTY INFORMATION

PLEASE REVIEW THE WARRANTY SHEET!

It is very important that you read and understand the conditions outlined in the Warranty Information Sheet. It is in an envelope attached to the outside of the shipping container.

The Warranty Information Sheet must be filled out completely, returned, and be ON-FILE at THE CHALLENGE MACHINERY COMPANY in order for the warranty to be issued for this machine.

Challenge® is a registered trademark of The Challenge Machinery Company. 6125 Norton Center Drive, Norton Shores, MI 49441-6081. Copyright © 2003 by The Challenge Machinery Company. All rights reserved. Printed in the U.S.A.
TABLE OF CONTENTS

INTRODUCTION ........................................................................................................ ii
SAFETY PRECAUTIONS ........................................................................................ v
CAUTION: POWER LOCK-OUT PROCEDURE ................................................... v
WARNING LABEL DEFINITIONS ..................................................................... vi
SPECIFICATIONS ............................................................................................... vii
PACKING LIST .................................................................................................... viii
1.0 INSTALLATION ................................................................................................ 1-1
  1.1 UNCRATING THE PAPER DRILL ............................................................... 1-2
  1.2 INSTALLING THE TABLE AND BACKGAUGE ....................................... 1-2
  1.3 INSTALLING THE DRILL BLOCKS AND DRILLS .................................... 1-3
  1.4 HYDRAULIC LEVEL CHECK ..................................................................... 1-3
  1.5 HOOKING UP THE POWER LINE ............................................................ 1-3
  1.6 INSTALLING THE CHIP CONTAINER .................................................... 1-3
2.0 OPERATION ...................................................................................................... 2-1
  2.1 STARTING THE MACHINE ....................................................................... 2-1
  2.2 OPERATING THE DRILL .......................................................................... 2-1
  2.3 ADJUSTING THE VERTICAL STROKE ..................................................... 2-1
  2.4 SETTING THE DISTANCE BETWEEN DRILL HEADS ............................... 2-1
  2.5 SETTING THE BACKGAUGE POSITION ............................................... 2-1
  2.6 USING THE SIDE GUIDE ........................................................................ 2-2
  2.7 ADJUSTING THE STROKE SPEED .......................................................... 2-2
  2.8 REMOVING THE CUTTING BLOCKS ....................................................... 2-2
  2.9 REMOVING DRILLS FROM THE SPINDLE ........................................... 2-2
  2.10 DRILLING TIPS ..................................................................................... 2-3
3.0ACCESSORIES .................................................................................................. 3-1
  3.1 GENUINE CHALLENGE HOLLOW DRILLS ............................................ 3-1
  3.2 CHALLENGE DRILL-EASE LUBRICANT STICK ..................................... 3-1
  3.3 CHALLENGE DRILLING BLOCKS ............................................................ 3-1
  3.4 HANDI-SHARP DRILL SHARPENER ...................................................... 3-2
  3.5 HOLLOW DRILL SHARPENER / CHIP REMOVER ................................. 3-2
    3.5.1 Using the Chip Remover .................................................................... 3-2
    3.5.2 Using the Drill Sharpener ................................................................. 3-2
  3.6 RIGHT-SIDE SIDEGUIDE KIT ................................................................. 3-3
  3.7 AUTO-TRIP BACKGAUGE ...................................................................... 3-3
    3.7.1 Setting the side guide stops ............................................................... 3-3
  3.8 FIXED GAGES ......................................................................................... 3-4
  3.9 TWO-HAND CONTROL KIT .................................................................... 3-5
  3.10 DRILL SHIELD KIT ............................................................................... 3-6
SAFETY PRECAUTIONS

This safety symbol means CAUTION/WARNING - PERSONAL SAFETY INSTRUCTION. Read the instructions because it has to do with safety. Failure to comply with the following instructions may result in personal injury.

• This machine is designed and safeguarded for ONE PERSON operation. NEVER operate the machine with more than one person.
• Safety of this machine is the responsibility of the user and operator. Use good judgement and common sense when working with and around this machine.
• READ and understand all instructions thoroughly before using the machine. If questions still remain, call your Authorized Challenge Dealer - Failure to understand operating instructions may result in personal injury.
• Only trained and authorized persons should operate the machine.
• DO NOT ALTER SAFETY GUARDS OR DEVICES, they are for your protection and should not be altered or removed. Severe lacerations could result.
• DISCONNECT POWER before cleaning, lubricating, servicing, or making adjustments not requiring power. See Power Lockout Procedure below.
• HIGH SPEED DRILL - Keep rags, loose clothing and long hair away from rotating drill. Personal injury could result from items being caught on drill.
• ALWAYS WEAR SAFETY GLASSES when operating the drill machine.
• Have your electrician make sure the machine is properly grounded.
• Have your electrician check for sufficient power to operate the machine properly.
• OBSERVE ALL CAUTION PLATES AND LABELS on this machine.
• KEEP FOREIGN OBJECTS off table and away from drill.
• BE EXTREMELY CAREFUL when handling and changing the drills. Severe lacerations or dismemberment could result from careless handling procedure.
• KEEP THE FLOOR around the machine free of trim, debris, oil and grease.
• When replacing hydraulic parts, loosen the connections slowly to release pressure. Never loosen connections with the machine running.
• If the machine sounds or operates abnormally, turn it off and consult the Trouble Shooting section of this manual. If the problem cannot be corrected, have it checked by a qualified service person or your Authorized Challenge Dealer.
• CRUSH HAZARD, keep feet off the pedal when handling paper under the clamp. DO NOT REST FOOT ON PEDAL at any time!
• DO NOT REACH UNDER THE DRILL AND CLAMP AREA!
• DO NOT OPERATE WITH ANY GUARDS REMOVED! Replace all guards after adjusting, lubricating or servicing the machine.
• SEVERE LACERATIONS - Contact with high speed drill could cause severe injury. Always turn machine off and wait for drill to stop before removing drill bits. Keep hands away from drill(s) when operating.

CAUTION: POWER LOCK-OUT PROCEDURE

For maximum safety when making adjustments or repairs to your machine, be sure to lock out the main power control switch to which the machine is connected. The switch should be thrown to the OFF position and a padlock placed in the loop. The key should be held by the person servicing the machine.

(fig. i)
WARNING LABEL DEFINITIONS

CUT/CRUSH HAZARD  
Keep hands from under drills.

SINGLE OPERATOR  
Do not operate with more than one person.

SHOCK HAZARD  
Disconnect power before removing cover. Replace cover before operation.

SHOCK HAZARD  
Disconnect power before removing cover. Replace cover before operation.

HAZARDOUS AREA  
Disconnect power before cleaning, servicing, or making adjustments not requiring power. Do not alter safety guards or devices, they are for your protection. Replace all guards, do not operate with any guards removed.
## SPECIFICATIONS

### Drilling

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Drill Heads</td>
<td>3</td>
</tr>
<tr>
<td>Drill Bit Sizes Available</td>
<td>1/8&quot; to 1/2&quot; (3 mm to 13 mm)</td>
</tr>
<tr>
<td>Range Between Drills</td>
<td>2 3/4&quot; to 4 1/2&quot; (7 cm to 11 cm)</td>
</tr>
<tr>
<td>Range Between Outside Drills</td>
<td>5 1/4&quot; to 9&quot; (14 cm to 23 cm)</td>
</tr>
<tr>
<td>Maximum Drilling Capacity (Pile Height)</td>
<td>2 1/2&quot; (63 mm)</td>
</tr>
<tr>
<td>Backgauge Adjustment Range (Std. Backgauge)</td>
<td>0 to 5&quot; (0 to 13 cm)</td>
</tr>
<tr>
<td>Auto Trip Backgauge (Optional)</td>
<td>0 to 4 1/2&quot; (0 to 11 cm)</td>
</tr>
<tr>
<td>Side guide Adjustment Range</td>
<td>0 to 14&quot; (0 to 37 cm)</td>
</tr>
<tr>
<td>Vertical Adjustment of Individual Heads</td>
<td>1/4&quot; (6 mm)</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table Size</td>
<td>19 1/2&quot; x 31 1/2&quot; (50 cm x 80 cm)</td>
</tr>
<tr>
<td>Table Height</td>
<td>37&quot; (94 cm)</td>
</tr>
<tr>
<td>Overall Height</td>
<td>59 1/4&quot; (151 cm)</td>
</tr>
<tr>
<td>Floor Space Needed</td>
<td>36&quot; x 41 1/2&quot; (91 cm x 105 cm)</td>
</tr>
<tr>
<td>Net Weight (Approximate)</td>
<td>525 lbs (236 kg)</td>
</tr>
<tr>
<td>Shipping Weight (Approximate)</td>
<td>570 lbs (257 kg)</td>
</tr>
</tbody>
</table>

### Electrical

- 208/230 Volts, 18 Amps, 1 Phase, 50/60 Hz, AC. Service size 30 Amps.

Challenge reserves the right to make changes to any product or specification without notice and without incurring responsibility to existing units.
# PACKING LIST

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5700</td>
<td>Backgauge Assembly</td>
<td>1</td>
</tr>
<tr>
<td>5734</td>
<td>Table Assembly</td>
<td>1</td>
</tr>
<tr>
<td>A-5874</td>
<td>Chip Bag</td>
<td>1</td>
</tr>
<tr>
<td>KK-281-2</td>
<td>Knockout, Cutting Block</td>
<td>3</td>
</tr>
<tr>
<td>KK-473-3</td>
<td>Drill Blocks, 3&quot; (1 doz)</td>
<td>1</td>
</tr>
<tr>
<td>CD-4-2-1/2</td>
<td>Hollow Drills, 1/4&quot; Diameter</td>
<td>3</td>
</tr>
<tr>
<td>CD-5-2-1/2</td>
<td>Hollow Drills, 5/16&quot; Diameter</td>
<td>3</td>
</tr>
<tr>
<td>K-85</td>
<td>Drift Hole Cover</td>
<td>3</td>
</tr>
<tr>
<td>A-4950-2</td>
<td>Hand Drill Sharpener / Chip Remover</td>
<td>1</td>
</tr>
<tr>
<td>4688</td>
<td>Lubrication Stick</td>
<td>1</td>
</tr>
<tr>
<td>4687</td>
<td>Drill Drift</td>
<td>1</td>
</tr>
<tr>
<td>W-141</td>
<td>1/8&quot; Allen Wrench</td>
<td>1</td>
</tr>
<tr>
<td>W-130</td>
<td>3/16&quot; Allen Wrench</td>
<td>1</td>
</tr>
<tr>
<td>W-137</td>
<td>5/32&quot; Allen Wrench</td>
<td>1</td>
</tr>
<tr>
<td>5841</td>
<td>.018&quot; Shim</td>
<td>3</td>
</tr>
<tr>
<td>5841-1</td>
<td>.035&quot; Shim</td>
<td>3</td>
</tr>
</tbody>
</table>

---

- **Drill Blocks**
- **Hollow Drills**
- **Drill Sharpener**
- **Drift Hole Covers**
- **Allen Wrenches**
- **Lubrication Stick**
- **Drill Drift**
- **Shims**
1.0 INSTALLATION

Refer to figure 1-1 on this page as well as the parts lists and drawings in the back of this manual for part identification and orientation, if necessary.

All guards and instruction plates are installed for your safety and information and must remain on the machine as shipped from the factory.
1.0 INSTALLATION & SETUP

1.1 UNCRATING THE PAPER DRILL

This machine is shipped on a wooden skid and is enclosed with a protective corrugated cover. It is held onto the skid with plastic straps. Remove the straps and carefully cut the corrugated cover down the side and unwrap it from around the machine. The table, backgauge, and other accessories are packed in separate boxes and are secured to the machine. Remove these and carefully position the machine on the floor. Immediately after uncrating, check off parts received against the packing list. Also, examine for any physical signs of damage incurred during shipping. The machine is inspected before and after it is crated at our plant. The responsibility for filing a claim against the carrier for damages incurred during shipment rests with the receiver of goods (FOB our factory).

Clean all parts with a commercial cleaning solvent before installing or using the machine.

1.2 INSTALLING THE TABLE AND BACKGAUGE

Locate the four (4) table mounting bolts, washers, & nuts shipped in the table drawer. Set the table assembly in place and attach using the hardware as shown in figure 1-2, but leave the hardware loose.

Using Auto-Trip Backgauge:

Attach the backgauge assembly to the table and set both sides to the 6” position (as shown in fig. 1-5). Next, position the table so that the front surface of the backgauge is 1-7/8” from the front of each pull down shaft (see fig. 1-5). Now tighten the front two table-mounting screws. Then move the backgauge forward and tighten the rear two screws.

Using Standard Backgauge:

Attach the backgauge assembly to the table and set both sides to the 6-7/8” position (as shown in fig. 1-3). Next, position the table so that the back surface of the backgauge comes in contact with the front of each pull down shaft (fig. 1-4). Now tighten the front two table-mounting screws. Then move the backgauge forward and tighten the rear two screws.
1.0 INSTALLATION & SETUP

Note: Further adjustments may be necessary once the machine is ready to drill. See Table Position Adjustment (section 4.3.1).

1.3 INSTALLING THE DRILL BLOCKS AND DRILLS

Place the drill block knock-outs in position (refer to fig. 1-1 if necessary). Now set the three drill blocks place. Check to see if the blocks are flush with the table. Place shims under the blocks if necessary.

Insert the tapered head of the hollow drills into the spindles. Be sure that the drift hole covers are in place before operating the machine (fig 1-1). The drift hole covers prevent paper chips from flying out while drilling.

1.4 HYDRAULIC LEVEL CHECK

Check the level of the oil in the hydraulic reservoir. This check is made by first removing the louvered panel at the left side of the stand (two screws hold it in place) and locating the breather cap on the top of the reservoir. The breather cap has a dip stick attached for checking the oil. When screwed in (and then removed to check) there should be approximately an 1/8" (3 mm) of oil on the stick. Some machines are equipped with a clear reservoir in which case the oil level can be checked by visually inspecting the oil level. There is a full level line marked on the reservoir. Recommended oils are found in the maintenance section of this manual (section 4.5.1).

1.5 HOOKING UP THE POWER LINE

The EH-3C is factory wired for 208/230 Volt, 1 phase, 50/60 hz. operation. It is the customer’s responsibility to wire the machine for the rated voltage using a 30 Amp circuit (minimum). The recommended circuit overload protection device should be 20 Amps. The recommended wire size for this hookup is #10 gauge.

1.6 INSTALLING THE CHIP CONTAINER

The chip container is installed by slipping it over the two hooks provided on the rear of the machine.
2.0 OPERATION

2.1 STARTING THE MACHINE

The power for this machine is supplied by two motors; one is for the hydraulic power pack, the other is for the spindle. They are both started and stopped simultaneously by a single set of start-stop buttons located on the stand under the table (fig. 1-1). Be sure both motors are operating before trying to drill paper.

2.2 OPERATING THE DRILL

CAUTION: Always wear safety glasses when operating this machine.

Pressing down on the foot switch activates the hydraulic unit which brings the drill heads (and drills) down to the table. When the drills reach the bottom of their stroke, they will automatically return the “up” position. (Note: The vertical stroke of the drills must be set before drilling to provide the proper drill depth. See section 2.3 for adjustment procedures). The pedal must be released and depressed again before drilling the next set of holes, assuring full control and allowing no repeat stroke. By releasing the pedal, the operator can stop the drills in their downward stroke at any time allowing them to return to their normal position, thus preventing costly errors. NEVER REST YOUR FOOT ON THE TREADLE WITHOUT INTENDING TO BRING DOWN THE DRILLS!

2.3 ADJUSTING THE VERTICAL STROKE

The vertical stroke of the machine determines the exact depth the drills will reach at the bottom of their stroke. Whenever installing a new set of drills, the vertical stroke must be adjusted before drilling.

The two outside heads are provided with independent height adjustment while the center head works from the center overall adjusting screw. This is necessary because of the variance in length of the drills. Start by adjusting the center head to its highest point. This is accomplished by turning the drill depth adjustment screw (fig. 1-1) counterclockwise until it stops turning. Then adjust the side heads all the way up by turning the knurled ring on the heads clockwise (use the provided drill drift in the holes if necessary). Now, with the new drills in the place, put two or three sheets of paper under the heads. The center spindle should then be adjusted so that the center drill just cuts through the paper. Too deep will cause a ragged hole in the bottom sheets as well as a shorter drill life from drilling into the cutting block. After the center drill is adjusted, each outside spindle can be adjusted. Turn counterclockwise to lower and clockwise to raise. No locking is necessary. Once all three drills are set, drill through a full lift of paper. A final adjustment of the drill depth adjusting screw may be necessary to obtain the best results.

2.4 SETTING THE DISTANCE BETWEEN DRILL HEADS

This machine incorporates three drilling heads operating on three belt-driven spindles. The center head is stationary while the two outside heads have a lateral adjustment of 1\(\frac{3}{4}\)" each.

This provides an adjustment range of 2\(\frac{3}{4}\)" to 4\(\frac{1}{2}\)" (7 cm to 11 cm) between the center drill and either of the outside drills, or a range of 5\(\frac{1}{2}\)" to 9" (14 cm to 23 cm) between the two outside drills.

The lateral adjustment is accomplished by loosening the clamp knob (a black, plastic hand knob) located at the rear of each outside head, and then turning the 4-lobed, black knob located at the outside of each head. This moves the heads along a shaft. A scale and pointer located at the front of the heads gives a reading in inches and millimeters of the center line relationship to the center head. When a setting is made, make certain that the clamp knob is tightened again.

Any combination of three heads can be used, that is one, two, or three holes may be drilled if desired. It is recommended, however that no more than two half inch hollow drills be used at the same time.

2.5 SETTING THE BACKGAUGE POSITION

The backgauge position is adjusted by first loosening the two thumb screws under the table. This will allow the backgauge to move freely. Then use the two scales on the top of the table to set the backgauge to the desired position. The scales read in inches and millimeters and will give the distance from the edge of the sheet to the center of the holes. Be sure the 1" (2.5 cm) square pieces mounted to the backgauge are aligned on top of the scales to provide the proper reading (fig. 1-1). Tighten the thumbscrews when finished.
2.6 USING THE SIDE GUIDE

To adjust the position of the side guide, loosen the two black knobs until the side guide is free to slide sideways. Slide the side guide to the desired position and then tighten the two knobs. For certain hole positions, it may be necessary to remove the rectangular spacer from the side guide assembly (fig. 2-1).

2.7 ADJUSTING THE STROKE SPEED

The hydraulic unit is equipped with an adjustable valve for regulating the speed on the drill stroke (up and down travel). Soft stocks such as mimeographs, etc., are apt to wrinkle at high speeds, and the speed should be set to a point where the best results are obtained.

This adjustment is made by turning the adjustable valve (located on the right side of the drilling machine stand) counterclockwise to reduce speed and clockwise to increase speed (fig. 2-2).

2.8 REMOVING THE CUTTING BLOCKS

Each cutting block is removed by inserting your fingers in the hole provided in the frame (under the table) and pushing up on the cutting stick knock out. There are three holes; one on each side of the frame and one in the front.

2.9 REMOVING DRILLS FROM THE SPINDLE

Remove the drift hole cover from the spindle to expose the drift hole. Then, with the flat side down, insert the drill drift into the hole and lift upward. The upward movement forces the drill down and releases it from the spindle.
2.10 DRILLING TIPS

**Important!** To prevent the drill from overheating, always avoid drilling too slowly. The drill stroke speed should be set at the fastest speed possible that still allows the drills to cut easily through the paper.

**Slotted Holes** - Instead of punching slotted holes for five and seven hole universal binding work, save time and cost by drilling a 1/2" (1.3 cm) diameter hole in place of the slot. The slot is only intended to allow the post or ring to be used in either location, and the large hole permits this.

**Plastic Bindings** - Drilling holes for plastic bindings, instead of punching them, is practical and saves a great deal of time, particularly on long run jobs.

**Keep Drills Sharp** - A dull drill is the major cause of drill breakage and production tie-ups. Usually after three hours of drilling, depending on the type of paper being processed, the drill should be sharpened. A dull drill results in poor quality work.

**Keep Drills Clean** - A dirty and rusty drill will not permit the free upward passage of the drill chips. Pressure built up by a clogged drill will split or break the drill. To keep it free from dirt or rust, clean the drill of all chips after each use and apply a light oil to the inside and outside. Drills should be cleaned out immediately after each use. This is particularly true if a coated or varnished stock has been drilled. On these jobs the coating on the chips frequently fuse the chips into one solid mass when the drill cools, causing breakage the next time the drill is used.

**Lubricate Drills** - Lubrication assists in the passage of the chips and helps avoid overheating of the drills. Use readily available stick lubricants for this purpose. Hold the end of the stick against the side of the rotating drill. Be sure to touch the cutting edge with the lubricant also. Wipe off excess oil before drilling. **CARE MUST ALWAYS BE TAKEN WHEN HANDLING DRILLS.**

**Keep Spindle Clean** - Clean out the drill spindle frequently. This will prevent any buildup in the spindle of the drill.

**Set the Drills Correctly** - Do not cut too deeply into the cutting block. The drill should just touch the block and cleanly cut through the bottom sheet. During drilling, do not set the drill deeper into the block but change the position of the block frequently. Drilling deeper into the block dulls the drills quickly. Use a piece of chipboard underneath your stock. This will make handling the stock easier and will ensure that the last sheet is cut cleanly through.

**Check for Drill Wobble** - If spindles are badly worn or bent through misadjustment, have them replaced immediately. A wobbly or loosely held drill can break.

**Check Your Drill Sharpener** - The cutting edge of the sharpening bit should be inspected frequently to make certain that it is sharp and free of nicks. Never let a drill drop onto the sharpening bit. It will chip the sharpening edge. Use gentle pressure when sharpening - let the sharpening bit do the work. Carefully check the sharpness of the drill after sharpening. The cutting edge should be razor sharp.

**Check Belt on the Drilling Machine** - The belt should be kept tight to assure proper speed of the drill. When the drill slows down, it acts more like a punch which results in poor quality work and drill breakage.

Just a little time and effort taken with each use of your paper drilling machine should result in trouble free operation over many years.
3.0 ACCESSORIES

3.1 GENUINE CHALLENGE HOLLOW DRILLS

In 13 Standard Sizes For Every Drilling Need

HOLLOW DRILLS

<table>
<thead>
<tr>
<th>Diameter x Drill Capacity</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot; x 5/32&quot; (3.2 x 16 mm)</td>
<td>CD-2-3</td>
</tr>
<tr>
<td>5/32&quot; x 1/4&quot; (4.8 x 41 mm)</td>
<td>CD-3</td>
</tr>
<tr>
<td>3/16&quot; x 15/32&quot; (4.8 x 41 mm)</td>
<td>CD-3</td>
</tr>
<tr>
<td>7/32&quot; x 2&quot; (5.6 x 51 mm)</td>
<td>CD-72</td>
</tr>
<tr>
<td>1/4&quot; x 2&quot; (6.3 x 51 mm)</td>
<td>CD-4</td>
</tr>
<tr>
<td>1/4&quot; x 2 1/2&quot; (6.3 x 63.5 mm)</td>
<td>CD-4-2</td>
</tr>
<tr>
<td>17/64&quot; x 2&quot; (6.7 x 51 mm)</td>
<td>CD-174</td>
</tr>
<tr>
<td>9/32&quot; x 2&quot; (7.1 x 51 mm)</td>
<td>CD-92</td>
</tr>
<tr>
<td>9/16&quot; x 2&quot; (7.9 x 51 mm)</td>
<td>CD-5</td>
</tr>
<tr>
<td>5/16&quot; x 2 1/4&quot; (7.9 x 63.5 mm)</td>
<td>CD-5-2</td>
</tr>
<tr>
<td>11/32&quot; x 2&quot; (8.7 x 51 mm)</td>
<td>CD-112</td>
</tr>
<tr>
<td>3/8&quot; x 2&quot; (9.5 x 51 mm)</td>
<td>CD-6</td>
</tr>
<tr>
<td>3/8&quot; x 2 1/2&quot; (9.5 x 63.5 mm)</td>
<td>CD-6-2</td>
</tr>
<tr>
<td>13/32&quot; x 2&quot; (10.3 x 51 mm)</td>
<td>CD-132</td>
</tr>
<tr>
<td>7/16&quot; x 2&quot; (11.1 x 51 mm)</td>
<td>CD-7</td>
</tr>
<tr>
<td>1/2&quot; x 2&quot; (12.7 x 51 mm)</td>
<td>CD-8</td>
</tr>
<tr>
<td>1/2&quot; x 2 1/2&quot; (12.7 x 63.5 mm)</td>
<td>CD-8-2</td>
</tr>
</tbody>
</table>

TEFLON COATED HOLLOW DRILLS

<table>
<thead>
<tr>
<th>Diameter x Drill Capacity</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot; x 5/32&quot; (3.2 x 16 mm)</td>
<td>TCD-2-3</td>
</tr>
<tr>
<td>5/32&quot; x 1/4&quot; (4.8 x 41 mm)</td>
<td>TCD-3</td>
</tr>
<tr>
<td>3/16&quot; x 1 5/32&quot; (4.8 x 41 mm)</td>
<td>TCD-3</td>
</tr>
<tr>
<td>7/32&quot; x 2&quot; (5.6 x 51 mm)</td>
<td>TCD-72</td>
</tr>
<tr>
<td>1/4&quot; x 2&quot; (6.3 x 51 mm)</td>
<td>TCD-4</td>
</tr>
<tr>
<td>1/4&quot; x 2 1/2&quot; (6.3 x 63.5 mm)</td>
<td>TCD-4-2</td>
</tr>
<tr>
<td>17/64&quot; x 2&quot; (6.7 x 51 mm)</td>
<td>TCD-174</td>
</tr>
<tr>
<td>9/32&quot; x 2&quot; (7.1 x 51 mm)</td>
<td>TCD-92</td>
</tr>
<tr>
<td>9/16&quot; x 2&quot; (7.9 x 51 mm)</td>
<td>TCD-5</td>
</tr>
<tr>
<td>5/16&quot; x 2 1/4&quot; (7.9 x 63.5 mm)</td>
<td>TCD-5-2</td>
</tr>
<tr>
<td>11/32&quot; x 2&quot; (8.7 x 51 mm)</td>
<td>TCD-112</td>
</tr>
<tr>
<td>3/8&quot; x 2&quot; (9.5 x 51 mm)</td>
<td>TCD-6</td>
</tr>
<tr>
<td>3/8&quot; x 2 1/2&quot; (9.5 x 63.5 mm)</td>
<td>TCD-6-2</td>
</tr>
<tr>
<td>13/32&quot; x 2&quot; (10.3 x 51 mm)</td>
<td>TCD-132</td>
</tr>
<tr>
<td>7/16&quot; x 2&quot; (11.1 x 51 mm)</td>
<td>TCD-7</td>
</tr>
<tr>
<td>1/2&quot; x 2&quot; (12.7 x 51 mm)</td>
<td>TCD-8</td>
</tr>
<tr>
<td>1/2&quot; x 2 1/2&quot; (12.7 x 63.5 mm)</td>
<td>TCD-8-2</td>
</tr>
</tbody>
</table>

Special order drills
17/32" x 2" (13.5 x 51 mm) ............... CD-172
9/16" x 2" (14.3 x 51 mm) ............... CD-9

3.2 CHALLENGE DRILL-EASE LUBRICANT STICK

Cat. No. 4688

This lubricating stick provides a dry stainless lubricant which has many uses throughout the printing plant. It is specially recommended for use on hollow drills for easier drilling, particularly when drilling clay coated stock. It eliminates binding and excessive heating of the drill. Will not discolor the stock.

CARE MUST ALWAYS BE TAKEN WHEN USING STICK AND HANDLING DRILLS.

3.3 CHALLENGE DRILLING BLOCKS

Cat. No. KK-473-3

These Challenge 3" End-Wood Drilling Blocks are for round hole drilling operations. Sold in packages of 12.
3.4 HANDI-SHARP DRILL SHARPENER  
Cat. No. 57100

The Handi-Sharp mounts on the edge of table or bench. A dull hollow drill bit is placed in the holder, and the cutting bit is pushed against the end of the hollow drill until its spring bottoms out. The spring prevents excessive force from being applied while sharpening. Turning the handle while applying a hone produces a fine edge.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement Cutting Bit</td>
<td>6469</td>
</tr>
<tr>
<td>Adapter for other style drill bits</td>
<td>57114</td>
</tr>
</tbody>
</table>

3.5 HOLLOW DRILL SHARPENER / CHIP REMOVER
For fast, easy drill sharpening and chip removal

CAUTION: Drills are sharp even after use. Be careful to keep edge away from your body. To prevent personal injury and/or damage to the drill, ALWAYS keep drills in protected area.

3.5.1 Using the Chip Remover

1. CAREFULLY place a hollow drill in the holder section as shown, and insert the holder (with drill) into the chip remover end as shown.
2. Firmly tap the entire assembly on a solid surface to remove the chips from the hollow drill.

NOTE: Chip remover is only for use with hollow drill diameters 3/16” and larger

3.5.2 Using the Drill Sharpener

1. CAREFULLY place a hollow drill in the holder section as shown, and insert the holder (with drill) into the sharpener end as shown. Be very careful to bring the drill and cutting tool together without bumping. The cutting tool is made of GLASS HARD material and may be chipped.
2. USE CLOCKWISE ROTATION while maintaining an even pressure, until the hollow drill is sharpened (usually two or three turns). The cutting tool seldom requires replacing, but when it does become necessary, the bit can be ordered through your Challenge Dealer (Cat. No. 4952).
3.6 RIGHT-SIDE SIDEGUIDE KIT  
Cat. No. K-5731

This kit includes all of the parts and hardware necessary to add a right-hand sideguide to your existing backgauge. When used in conjunction with the left-hand sideguide, multiple hole patterns can be drilled by shifting the stock from one sideguide to the other between drilling cycles.

3.7 AUTO-TRIP BACKGAUGE  
Cat. No. A-4615-9

This optional backgauge assembly provides additional versatility to the EH-3C. The automatic trip on the side guide permits step and repeat type of operation with a minimum distance between holes of $\frac{3}{8}$" (9.5 mm) with the standard stops or $\frac{1}{4}$" (6.3 mm) minimum by the use of a fixed gage, available as optional equipment.

As each set of holes is drilled, the side guide is automatically tripped, and as soon as the drills clear the stock on their up stroke, the guide is free to move to its next stop. This is accomplished by pushing the stock to the left and moving the guide at the same time. When drilling one, two or three holes only, that fall within the 9" (23 cm) limitations of the machine, the automatic trip bracket (located at the left of the machine) can be turned so that it does not engage the trip lever.

3.7.1 Setting the side guide stops

First set the rear gage to the desired back margin. Be sure both sides are set to the same dimension and tighten the two thumbscrews. Next, remove the guide shaft and set the guide stops to the desired distance between holes (a scale in the guide shaft is provided for this purpose). The guide shaft is then replace in the rear gage and final adjusting or centering of holes is accomplished with the knurled screw at the extreme left end of the guide shaft.

The automatic trip gage comes equipped with seven stops. Additional stops can be purchased at a very nominal price. Challenge fixed index gages are recommended where the same job is to be handled over and over again. They are easily and quickly attached and removed. NOTE: When drilling narrow strips, the side guide roller assembly should be mounted on the inside of the side guide assembly.
3.8 FIXED GAGES
For Fast, Accurate Hole Spacing
(For use with optional auto-trip backgauge only)

These fixed gages with pre-cut hole spacings fit on the side guide in place of the moveable stops. To use, position the gage so that the right end lines up with the dimension on the scale for the centerline of the first hole to be drilled. Use of the stops on fixed gages is the same as using the adjustable stops.

In addition to 2-5 hole patterns, fixed gages are available from stock in the following standard types:

- 22-stop gage, 1/2” centers for multi-ring binders
- 25-stop gage, 3/8” centers
- 25-stop gage, 1/4” centers
- 34-stop gage, 1/2” centers
- 46-stop gage, 3/8” centers
- 50-stop gage, 1/4” centers

Custom patterns can also be supplied, call for details.
This 2-hand control safety kit can be installed on the EH-3C in place of the standard foot pedal control. All of the necessary hardware and instructions are included in the kit. The 2-hand control offers anti-tiedown and anti-repeat features, which means both buttons must be released between each cycle, and both buttons must be pressed within .5 seconds of each other.
This drill shield safety kit includes a clear Lexan shield that protects the operator from contacting the spinning drills. The kit can be installed on all EH-3A, EH-3B, and EH-3C machines. All of the necessary hardware and instructions are included in the kit (see Page 5-24).