

# ***Challenge JF Single Spindle Paper Drill***

Instruction Manual



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SERIAL NO- \_\_\_\_\_

MODEL- \_\_\_\_\_

**SAFETY ALERT**



This safety alert symbol means **CAUTION OR WARNING-PERSONAL SAFETY INSTRUCTION**. Personal injury may result if safety precautions are not carefully read before attempting to operate or repair this machine. See **SAFETY PRECAUTIONS**, page 6

- 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

# Instruction and Parts Manual



# MODEL JF Paper Drilling Machine

This manual covers serial numbers 975060 & up.  
**ALWAYS GIVE THE SERIAL NUMBER OF YOUR MACHINE WHEN WRITING.**

*Sold and serviced by*

**THE CHALLENGE MACHINERY COMPANY**

1433 Fulton Avenue, Grand Haven, Michigan 49417-1594 U.S.A.  
Phone: 616/842-8300 • Fax: 616/842-6511 • [www.challengemachinery.com](http://www.challengemachinery.com)

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## INTRODUCTION

**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.

**THE CHALLENGE REPUTATION** is important to you as a user for the continuous, ready availability of parts and service.

**THIS MANUAL** is designed to help you get the most from your Challenge equipment. Keep this manual in a safe, convenient place for quick reference by operators and service personnel.



**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.

**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 or the Challenge Service Department. For the dealer nearest you or for service questions call (616)-842-8300.

**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, 1433 Fulton Avenue, Grand Haven, MI 49417-1594. Fax (616) 842-6511. Phone (616) 842-8300.

CHALLENGE MODEL	SERIAL NUMBER	
ATTN	COMPANY	
ADDRESS		
CITY	STATE	ZIP
PHONE	DATE INSTALLED	
DEALER'S NAME AND CITY		

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## WARRANTY INFORMATION

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### **PLEASE REVIEW THE ENCLOSED WARRANTY SHEET!**

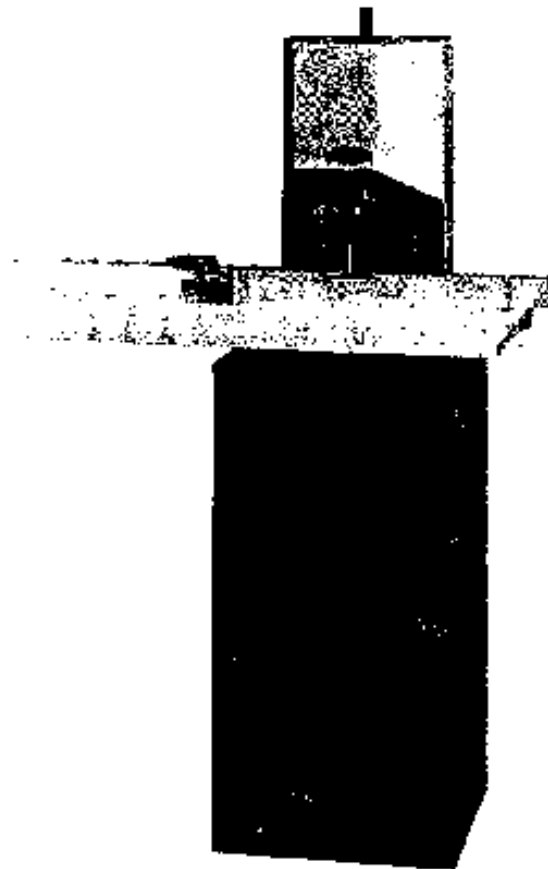
It is **very important** that you read and understand the conditions outlined in the Warranty Information Sheet included with the manual information package.

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.

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## PACKING LIST

Part No.	Description	Qty.
	Basic Machine.....	1
A-6050-1	Backgage Assembly .....	1
A-3975	Cutting stick knockout .....	1
A-4690-3	Table Assembly .....	1
5309	Adjustment Rod .....	1
F-330-J	Instruction & Parts Manual .....	1
K-4620	Tool Kit - Includes the following: .....	1
CD-4	1/4" (64mm) Hollow Drill .....	1
CD-5	5/16" (79mm) Hollow Drill .....	1
K-85	Drift hole cover .....	1
W-141	1/8" Allen Wrench .....	1
W-154	3/32" Allen Wrench .....	1
S-1615	Cork .....	1
S-2021	Spring Plunger .....	1
3949	Paper shims (cutting block) .....	1
A-4682	Cutting Blocks (1 dozen) .....	1
4585	Drill cleaner .....	1
4587	Drill drift .....	1
4588	Lubrication stick .....	1

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## SPECIFICATIONS

### Drilling

Drill Diameters Available (2" capacity)	13 sizes: 1/8" to 1/2" (3 mm - 13 mm)
Maximum Drilling Capacity*	2" (5 cm)
Minimum Distance Between Holes	
(with adjustable stops)	3/8" (10 mm)
(with fixed gage)	1/4" (6.4 mm)
Adjustable Range	
(bit to side guide)	0 to 18-1/2" (0 to 47 cm)
(bit to backgage)	0 to 4" (0 to 10 cm)

### Dimensions

Table Height	38" (97 cm)
Overall Height	60" (142 cm)
Floor Space Required	32" x 42" (81 cm x 107 cm)
Net Weight (Approximate)	154 lbs (70 kg)
Shipping Weight (Approximate)	178 lbs (81 kg)

### Electrical

115 Volts ( $\pm 10\%$ ), 1 Phase, 60 Hz, AC. Service size: 15 Amps. Motor: 1/4 HP, 5.6 Amps
230 Volts ( $\pm 10\%$ ), 1 Phase, 60 Hz, AC. Service size: 15 Amps. Motor: 1/4 HP, 2.8 Amps
115 Volts ( $\pm 10\%$ ), 1 Phase, 50 Hz, AC. Service size: 15 Amps. Motor: 1/4 HP, 5.6 Amps
230 Volts ( $\pm 10\%$ ), 1 Phase, 50 Hz, AC. Service size: 15 Amps. Motor: 1/4 HP, 2.8 Amps

### Sound Emission

A-weighted sound pressure level measured in an enclosed room at 6 feet (183 cm) above floor

Machine running.	Less than 70 dB
Machine drilling paper.	Less than 70 dB

\* Smaller diameter drills have less capacity

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



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## SAFETY PRECAUTIONS

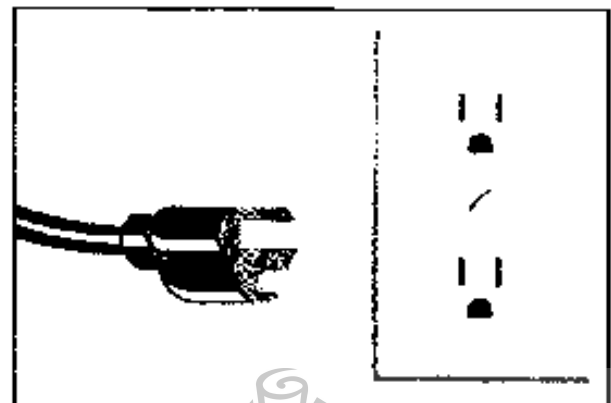


This safety symbol means **CAUTION/WARNING - PERSONAL SAFETY INSTRUCTION**. Read the instructions because it has to do with safety. Failure to comply with the following instructions may result in personal injury.

- 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. Lock the disconnect switch in the **OFF** position, 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.
- **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.
- 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 and to prevent unauthorized use, turn the power switch to the **OFF** position and disconnect the power cord whenever adjusting, lubricating, or making repairs to the machine.



(fig. 1)

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## WARNING LABEL DEFINITIONS



### 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.



# INSTALLATION

**NOTE:** All guards and instruction plates are installed for your safety and information and must remain on the machine as shipped from the factory.

## Uncrating the Paper Drill

Unless otherwise specified, this machine is shipped in a cardboard container with the cutting stick knockout, backgage, and table removed. These items are packed separately. The machine should be unpacked carefully so as not to damage any of the machine parts.

Immediately after uncrating, check off parts received against the packing list. Also, examine for any physical signs of damage incurred during shipment. The machine is inspected before and after crating at the factory. The responsibility for filing a claim against the carrier for damages incurred during shipment rests with the receiver of the goods (FOB our factory).

The machine is held in place on its shipping skid by means of wooden blocks. Remove these blocks and then carefully position the machine on the floor.

Clean all parts with a commercial cleaning solvent (such as C R C.) before installing or using the machine.

## Installing the Table

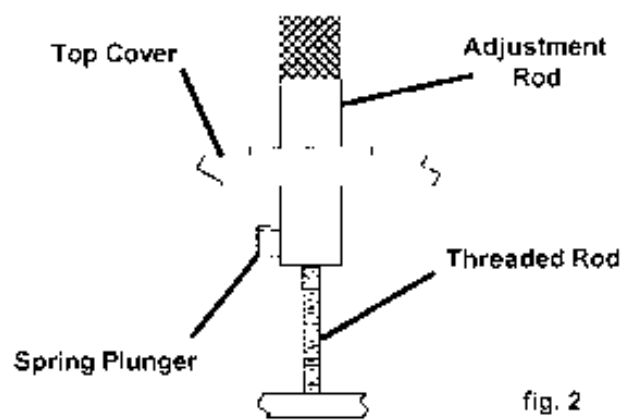
The table is held in place with four socket head machine screws and washers provided. Simply position the table, line up the holes, and tighten the screws.

## Installing the Backgage

To install the backgage you must first remove the pressure foot assembly (held in place with two knurled screws). While facing the front of the machine, hold the backgage with the opening toward you and slip it on the front of the table. Then slide the gage back on the table and fasten to the table with the two thumb screws provided.

## Installing the Table Height Adjustment Rod

First remove the back cover. Then, with the spring plunger out of the adjustment rod, turn the adjustment rod on the threaded rod until approximately 1" (2 cm) of thread are engaged. Next, install the spring plunger by turning it in all the way, then turn back 1/4 to 1/2 turn (see fig. 2).



## Final Installation

Attach the pressure foot assembly in place with the two knurled screws provided.

Place the cutting stick knockout in position. Place paper shims as necessary on the cutting stick knockout. Place the drill block in the table.

Insert the tapered head of the hollow drill into the spindle. Be sure the drift hole cover is in place before operation.

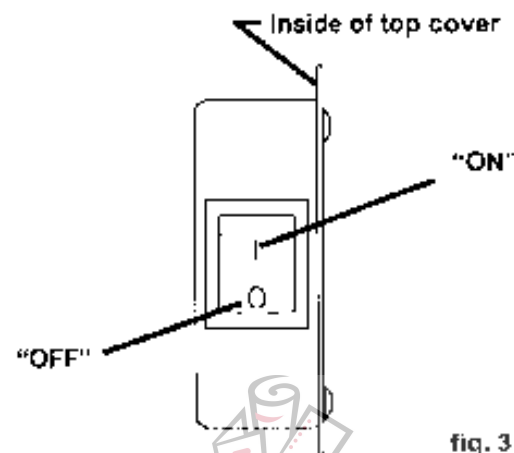
## Power Hook Up

The JF Drill is factory wired to the customer's specifications. It is important that the power source complies with the voltage and current specified on the name plate of this machine. We recommend that this machine be plugged into a 15 amp circuit.

# OPERATION

## Starting the Machine

The power for this machine is supplied by a single motor which directly drives the spindle. It is started and stopped by a rocker switch located on the inside of the top cover toward the right side of the machine (fig. 3).



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## Operating the Drill

First be sure that the switch is turned on. Depressing the foot treadle brings the drill down through the lift of stock. After the drill reaches the bottom of its stroke, release the treadle and the drill return to its top position.

The foot treadle can be released at any time during the downward stroke of the drill, thus preventing costly errors. Never rest your foot on the treadle without intending to bring down the drill.

## Using the Auto-Trip Side Guide

As each hole is drilled, the side guide is automatically tripped, and as soon as the drill clears the stock on its upstroke, 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 only one hole jobs, when slotting, or when cornering, the automatic trip arm should be locked in its up position by tightening the thumbscrew.

## 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, loosen the set screws which hold the stops in place and slide the stops to the desired dimension between holes (a scale in the backgage is provided for this purpose). The first stop is always set for the distance from the edge of the sheet to the center of the first hole. Final adjusting or centering of the holes is accomplished with the knurled screw at the left end of the side guide arm. Loosening the finger screw on the top of the side guide arm allows the knurled screw to be turned in or out, thus increasing or decreasing the distance to the centerline of the drill (and hole). Before drilling a full lift of stock, it is recommended that a sample sheet be drilled and measured to check this fine adjustment. Be sure that the finger screw is retightened before drilling.

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. See page 25 for more details.

**NOTE:** When drilling narrow strips, the side guide roller assembly should be mounted on the inside of the side guide assembly.

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# ROUTINE ADJUSTMENTS

## Adjusting the Vertical Stroke

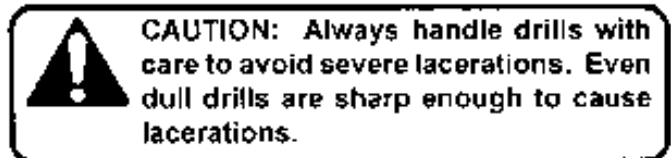
Always turn the adjustment rod in (clockwise) all the way when changing drills (fig. 2, pg. 8). With the new drill in place, turn the adjustment rod out (counter clockwise) in small increments until the drill will just cut through the bottom sheet of a lift before reaching the bottom of its stroke. Do not set the spindle so low that the drill "burns" into the cutting block at the bottom of its stroke.

It is important to adjust the vertical stroke whenever changing drills or when slotting or cornering. This will prevent the drill or knife from cutting too deep into the cutting block.

## Removing the Cutting Block

To remove the cutting block, simply reach under the table and push up on the cutting stick knockout.

## Removing Drills from the Chuck



Insert the drill drift, flat side down, into the hole in the chuck and lift upward. The upward movement forces the drill down and releases it from the chuck. The spring clip on the end of the chuck is provided to cover the drift hole and prevent paper chips from flying out when drilling small diameter holes.

**NOTE:** Sometimes the drills become so firmly seated in the chuck that it is necessary to tap on the drift to get the drill to release.

# ROUTINE MAINTENANCE

## Service Checklist

### Daily

1. Sharpen the hollow drill often and reset the spindle adjustment rod if needed.
2. Lubricate the hollow drill frequently with the Drill-ease provided.
3. For better hollow drill life, remove the drill when not in use and soak in light oil or kerosene.

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## Weekly

1. Clean guide bar shafts around frame and oil with No. 30 oil
2. Clean side guide shaft and oil with light oil.
3. Clean clevis pins and oil with light oil

## TROUBLE SHOOTING

(Refer to parts lists for part location, number, and description.)

Problem	Area to Check	Solution
1. Lack of power	Check voltage at machine - may be low.  Check for bind in treadle assembly.	Remove other machinery on line or provide a separate branch circuit.  Free bind, clean, and oil.
2. Drill head won't return	Check lift springs - may be broken or stuck	Pry up head, clean and oil shafts. (Replace springs if necessary.)
3. Drill head won't come down.	Check for broken lift spring - may be jammed.	Replace spring.

## DRILLING TIPS

**Important!** To prevent the drill from overheating, always avoid drilling too slowly. The drill should be brought down as rapidly as possible allowing the drills to easily cut 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 inch 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.

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## DRILLING TIPS (cont.)

**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.

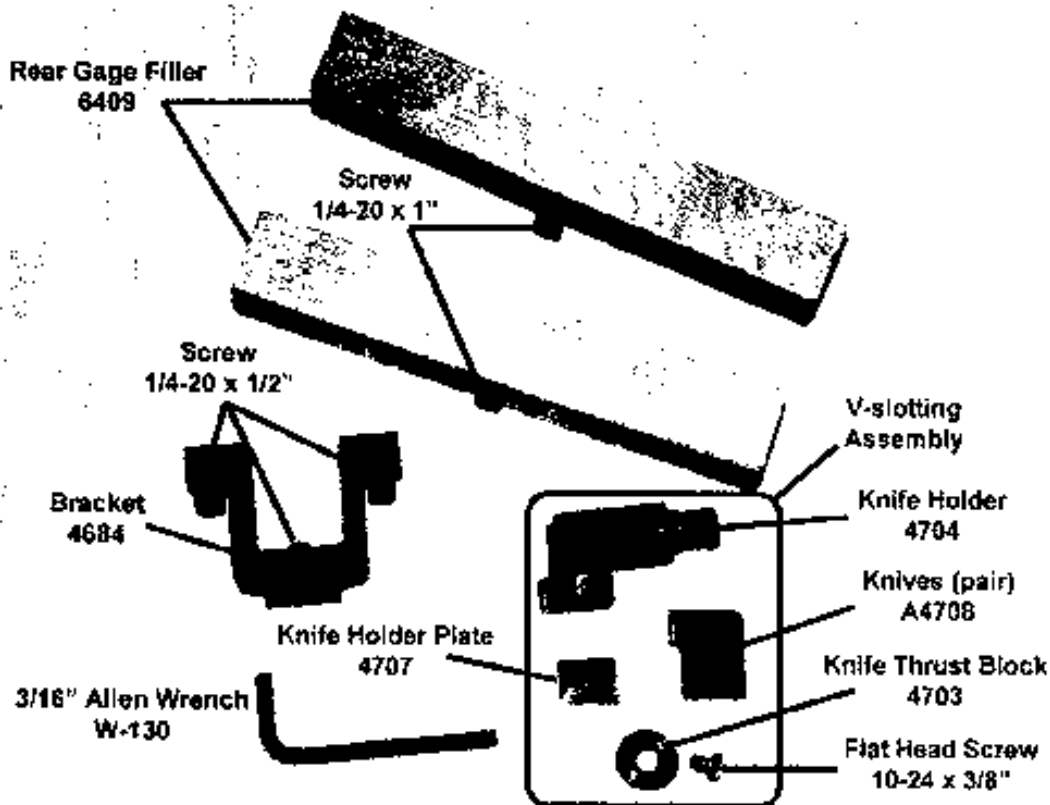
**Check for Drill Wobble** - If the spindle is badly worn or bent through misadjustment, have it replaced immediately. A wobbly or loosely held drill will break.

**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. Check the sharpness of the drill after sharpening. The cutting edge should be razor sharp.

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

**PARTS CUSTOMERS:** The Challenge Machinery Company provides parts with the express understanding that they are to replace parts found missing or no longer serviceable on equipment designed and/or manufactured by Challenge. The Challenge Machinery Company assumes no liability for any modification or alteration to any Challenge products, and any such modification or alteration to any Challenge products is not authorized by The Challenge Machinery Company. Any modification or alteration of any Challenge product will void any remaining warranty.

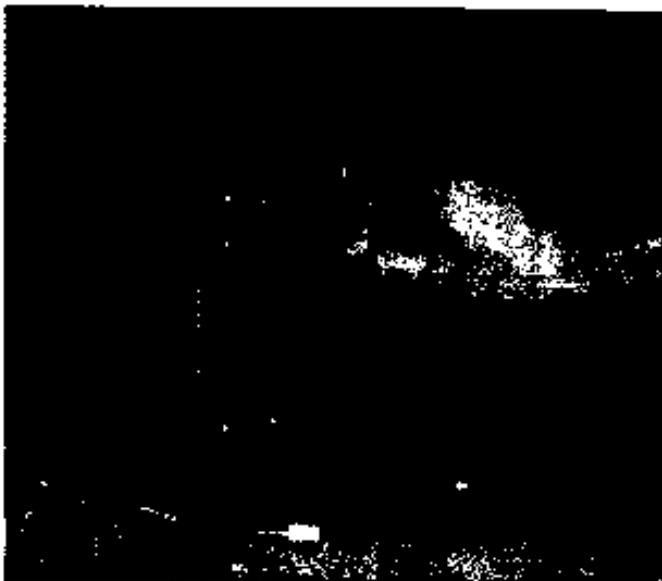
## SLITTING AND SLOTTING ATTACHMENTS A-6410



**WARNING: DISCONNECT POWER** before cleaning, servicing, or lubricating your drill.

### V-Slotting

To cut V-slot holes, first drill the round holes. Turn off the power and remove the drill.



Remove the pressure foot by unscrewing the knurled nuts.

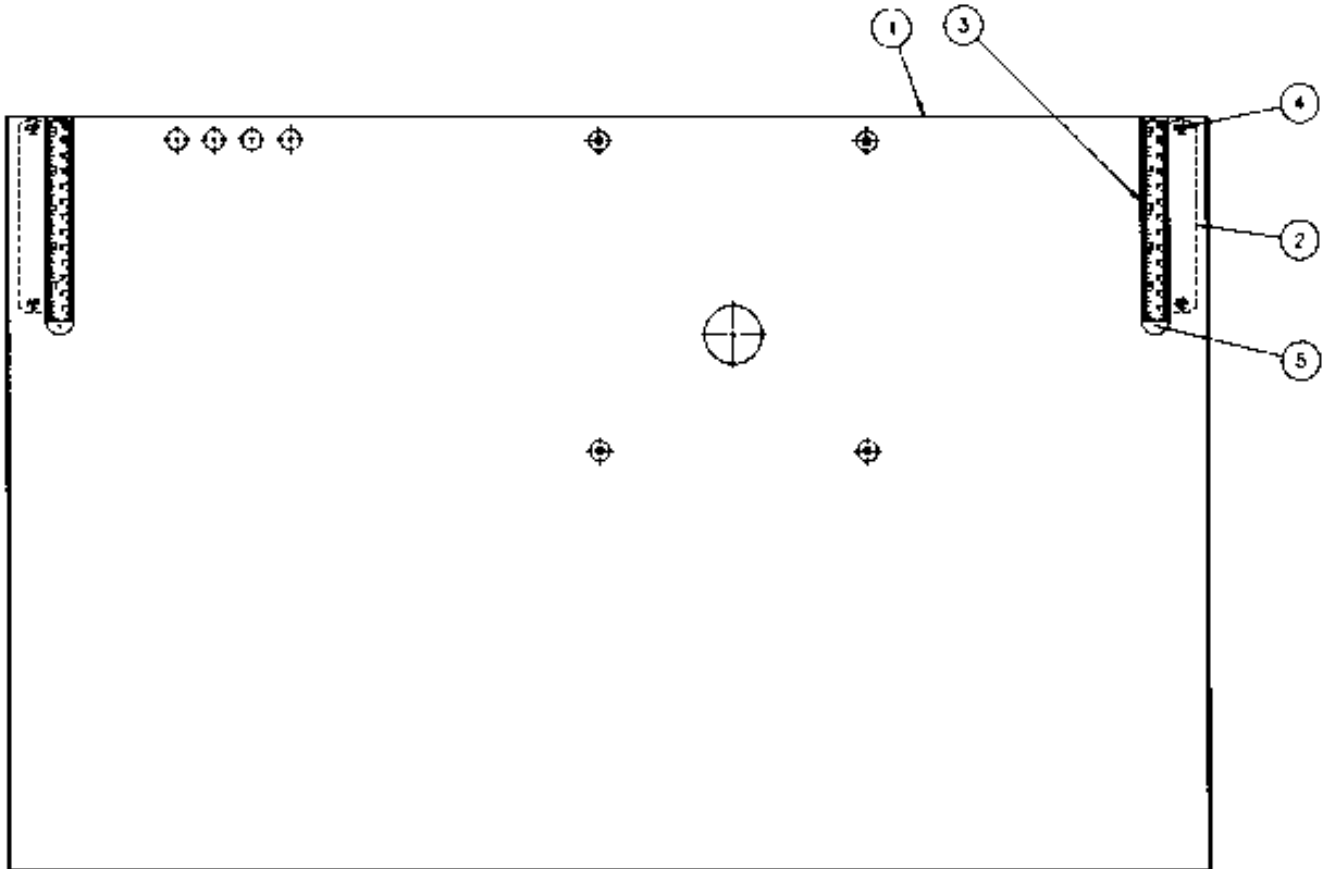


Install the mounting bracket with the holder socket screw facing the operator.



Attach the backgauge fillers

**TABLE ASSEMBLY**  
**A-4690-3 REV. E**



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	4691-3	TABLE	1
2	4635	SIDE STRIP	2
3	4636	SCALE	2
4	H-6961-605	#6 X 5/8 LG. FLAT HD. WOOD SCREW	4
5	S-1792	1/2 X 19 WIRE NAILS	4



Next, attach the knife assembly. Align the blades to the already drilled holes and tighten the holder socket screw.



the hole and proceed to the next slot position.



Reattach the pressure foot assembly using the two knurled screws.

For best results, lay a sheet of chipboard underneath your work and set the depth-of-cut so it just makes it through the chipboard. The blades should not cut into the wood block when slotting or slitting.

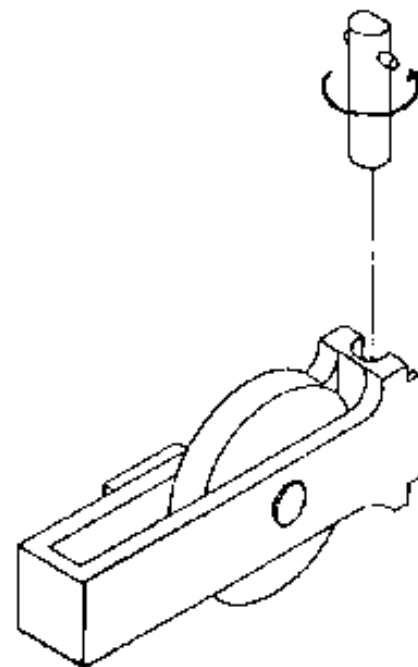
### Slitting

For slitting work, remove the knife thrust block, take out the left hand knife and set it aside.

Remove the right hand knife and position it in the left hand knife slot.

Place the knife holder in the right hand knife slot and replace the thrust block and screw. Replace the knife holder in the mounting bracket and turn the holder in the bracket to cut a straight slit. Make your first slit farthest from the side guide\*, then slit the other side of

For narrow slots, position the side guide stops for the first cut farthest from the side gage\*. Leaving the side gage at the same position, lift the side guide face and turn it around.



Jog the stock square against the back and side gages and make the second cut. Your slot is now complete.

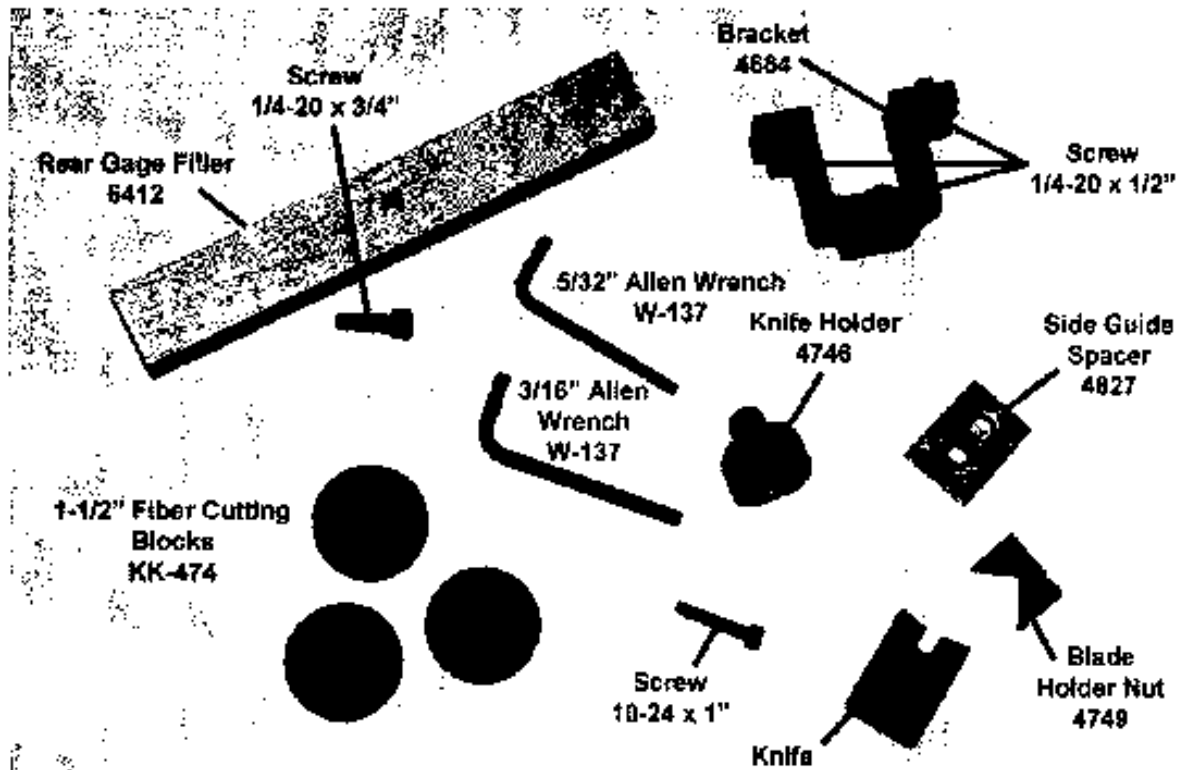
Remember to return the side guide face to the standard position before making the next slot.

\*Always make the first cut farthest from the side gage. This prevents draw on the paper that would give irregular cuts.

**NOTE: Maximum slitting and slotting capacity is 1/2" (13 mm).** Be sure to check the stroke adjustment to prevent the knives from cutting too deep into the cutting block.

# LIGHT DUTY CORNERING ATTACHMENT

A-6411



Knives available:

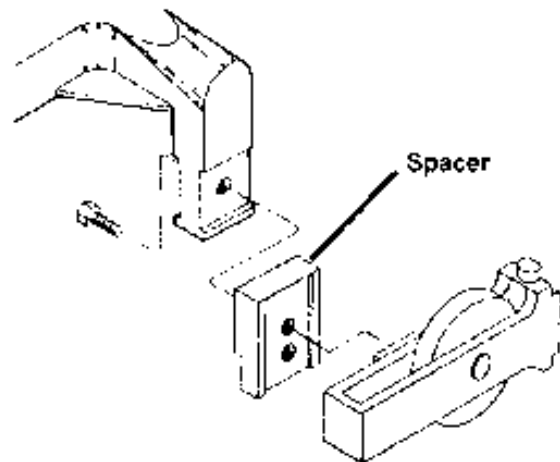
Straight Diagonal	1/8"	1/4"	7/16"
	(3 mm)	(6 mm)	(11 mm)
	4741	4742	4743
			4744 (supplied)

**WARNING: DISCONNECT POWER before cleaning, servicing, or lubricating your drill.**

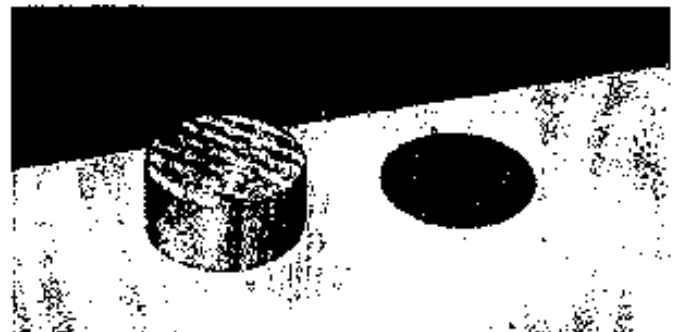
To install the cornering attachment, make sure the power is locked out and then remove the hollow drill.



Next, remove the pressure foot by unscrewing the two knurled nuts.



Now install the side gage spacer (JF only). The spacer may be left in place for normal drilling, but must be removed for drilling narrow strips.



Replace the wooded drill block with the three fiber blocks





Install the rear gage filler block on the right side of the backgage

Install the cornering attachment bracket as follows:

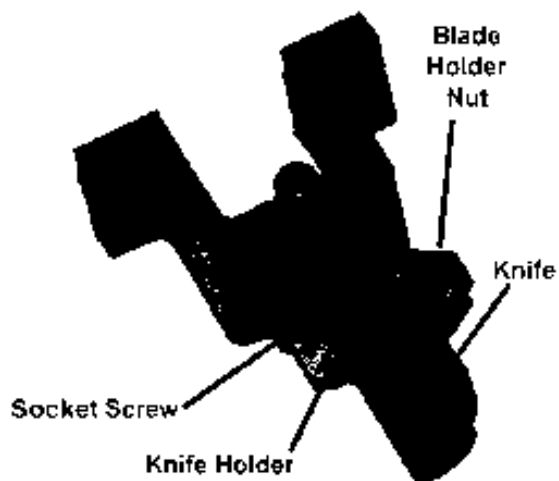


When using the cornering knives, the knife holder socket screw should face the rear of the machine, this puts the bracket mounting holes in the rear position and centers the knife on the cutting block.

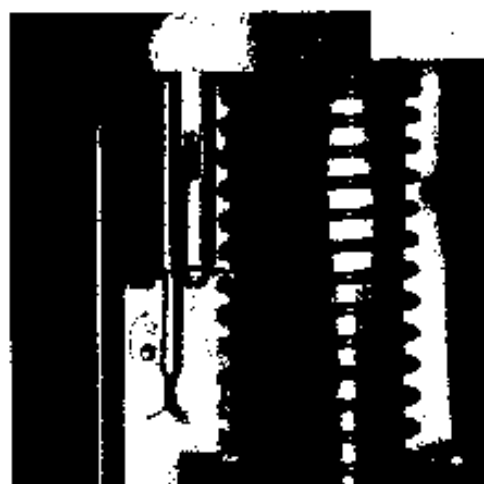


When using the straight diagonal knife, the bracket is reversed, with the holder socket screw facing the operator. The holder mounting screws are then in the forward position.

Install the knife holder assembly in the bracket and tighten the knife holder socket screw. The knife holder comes assembled with the knife installed. Double check to make sure the knife blade is held firmly by tightening the socket screw.



Adjustments to the paper are made by positioning the side and back gages. The knife is squared to the paper by loosening the knife holder socket screw and rotating the knife holder assembly so that the knife edges match up to the sides of the paper.

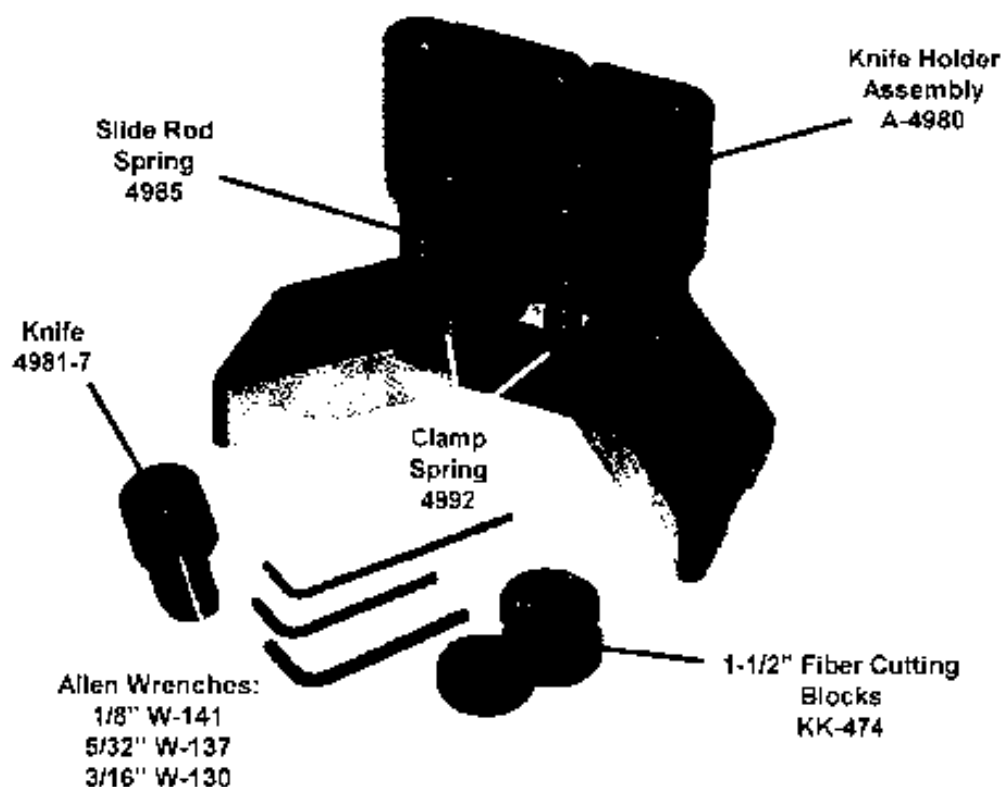


Raise the auto trip mechanism and lock it out of the way with the thumb screw.

Your Challenge paper drill is now ready to corner

**NOTE: Maximum cutting capacity is 1/2" (13 mm).** Be sure to check the stroke adjustment to prevent the knife from cutting too deep into the cutting block.

# CORNER-MATIC HEAVY DUTY CORNERING ATTACHMENT A-4980



Knives available:

1/8" (3 mm) 4981-2	1/4" (6 mm) 4981-4	3/8" (9.5 mm) 4981-6	7/16" (11 mm) 4981-7 (supplied)
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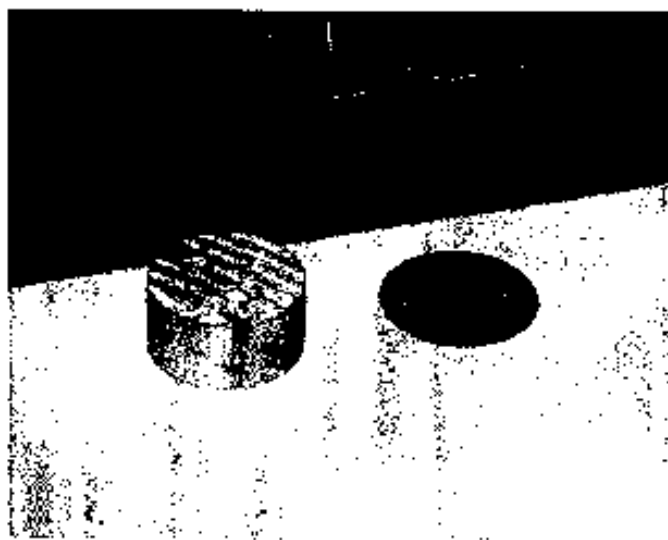


**WARNING: DISCONNECT POWER** before cleaning, servicing, or lubricating your drill.

To install the cornering attachment, make sure the power is locked out and then remove the hollow drill

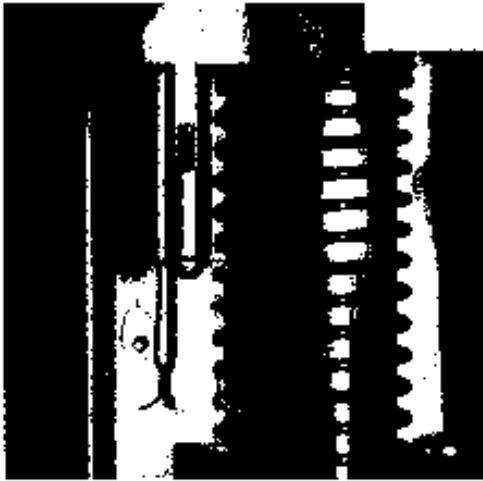


Next, remove the pressure foot by unscrewing the two knurled nuts.



Replace the wooded drill block with the three fiber blocks.

Move the backgag to the rear of the table and position



the side gage to the far left of the table. You may also want to lock the auto trip mechanism out of the way



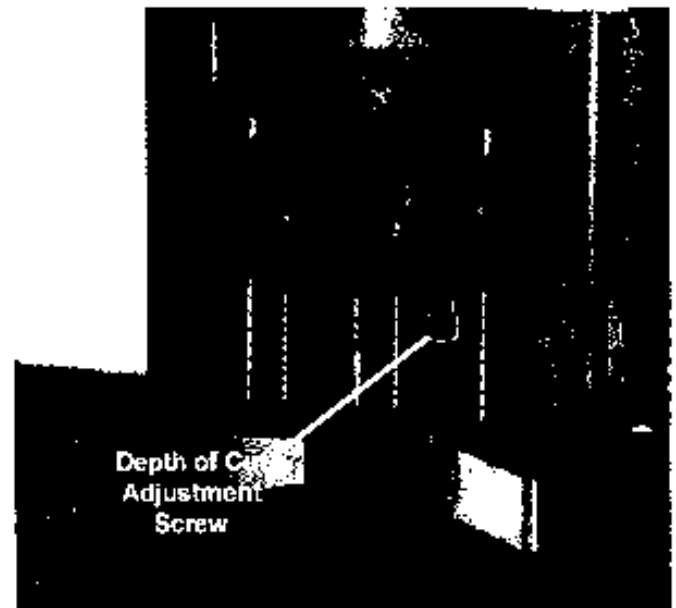
Align the knife holder to the holes for the pressure foot. Press down on the holder and slide it into place.



Install the knife blade from the rear of the attachment, slide it up into position, and tighten the socket screw to hold it in place.



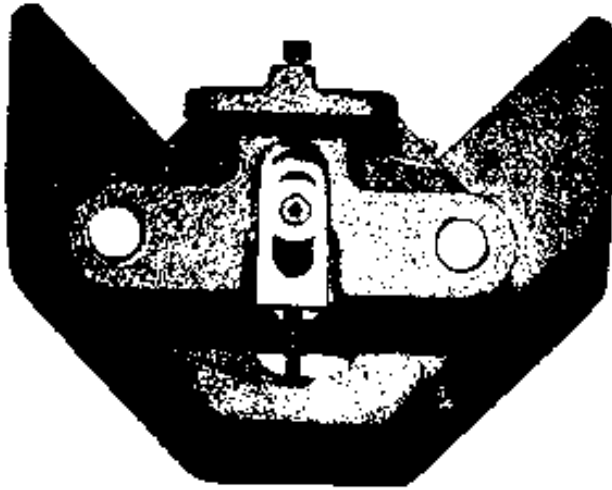
Attach the holder to the machine with the knurled nuts on the right side of the attachment that held the pressure foot in position.



The depth of cut may be adjusted with the knurled screw on the right side of the attachment. The knife blade should just make it through the stock and not cut into the fiber block.

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The blade can be squared to the paper by loosening the socket screw in the knife itself and rotating the blade until the edges of the knife match the edges of the paper.



The blade can also be adjusted into or out of the paper, depending on which blade you are using, by loosening the socket screw on the front and tightening the socket screw in the rear of the attachment to bring the knife forward, or by loosening the rear socket screw and tightening the front socket screw you can move the knife farther back.

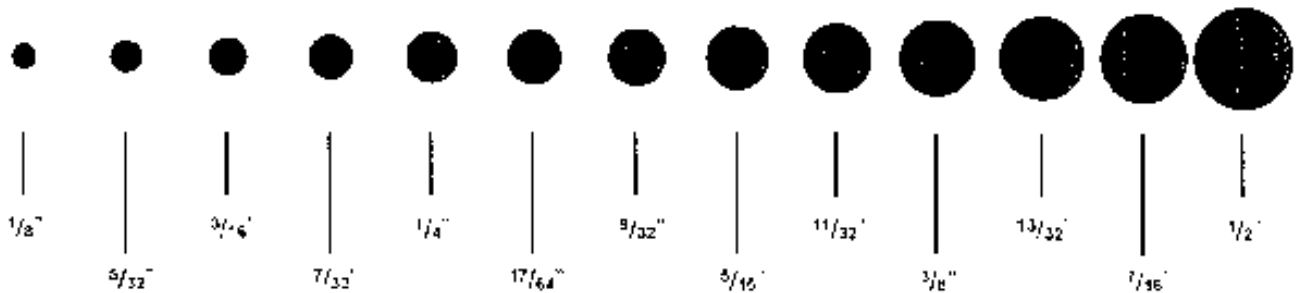
Your Challenge paper drill is now ready to corner

**NOTE: Maximum cutting capacity is 1" (25 mm).** Be sure to check the stroke adjustment to prevent the knife from cutting too deep into the cutting block.



# ACCESSORIES FOR CHALLENGE PAPER DRILLING MACHINES

## Genuine Challenge Hollow Drills In 13 Standard Sizes For Every Drilling Need



All drills carried in stock by local Challenge dealers ( $17/32$ " &  $9/16$ " available by special order).

### HOLLOW DRILLS

Diameter x Drill Capacity	Cat. No.
$1/8$ " x $5/8$ " (3.2 x 16 mm)	CD-2-3
$5/32$ " x $1 1/8$ " (4 x 29 mm)	CD-52
$3/16$ " x $1 5/8$ " (4.8 x 41 mm)	CD-3
$7/32$ " x 2" (5.6 x 51 mm)	CD-72
$1/4$ " x 2" (6.3 x 51 mm)	CD-4
$17/64$ " x 2" (6.7 x 51 mm)	CD-174
$9/32$ " x 2" (7.1 x 51 mm)	CD-92
$5/16$ " x 2" (7.9 x 51 mm)	CD-5
$11/32$ " x 2" (8.7 x 51 mm)	CD-112
$3/8$ " x 2" (9.5 x 51 mm)	CD-6
$13/32$ " x 2" (10.3 x 51 mm)	CD-132
$7/16$ " x 2" (11.1 x 51 mm)	CD-7
$1/2$ " x 2" (12.7 x 51 mm)	CD-8
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

### TEFLON COATED HOLLOW DRILLS

Diameter x Drill Capacity	Cat. No.
$1/8$ " x $5/8$ " (3.2 x 16 mm)	TCD-2-3
$5/32$ " x $1 1/8$ " (4 x 29 mm)	TCD-52
$3/16$ " x $1 5/8$ " (4.8 x 41 mm)	TCD-3
$7/32$ " x 2" (5.6 x 51 mm)	TCD-72
$1/4$ " x 2" (6.3 x 51 mm)	TCD-4
$17/64$ " x 2" (6.7 x 51 mm)	TCD-174
$9/32$ " x 2" (7.1 x 51 mm)	TCD-92
$5/16$ " x 2" (7.9 x 51 mm)	TCD-5
$11/32$ " x 2" (8.7 x 51 mm)	TCD-112
$3/8$ " x 2" (9.5 x 51 mm)	TCD-6
$13/32$ " x 2" (10.3 x 51 mm)	TCD-132
$7/16$ " x 2" (11.1 x 51 mm)	TCD-7
$1/2$ " x 2" (12.7 x 51 mm)	TCD-8

### 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.**

### Challenge Drilling Blocks

Cat. No. A-4682

These Challenge  $1 1/2$ " (38 mm) wood drilling blocks are for round hole drilling operations. Sold in packages of 12.



### Challenge Fiber Blocks

Cat. No. KK-474

These tough,  $1 1/2$ " (38 mm) fiber cutting blocks are recommended for all cornering and slitting operations. Sold in packages of 12.



## ACCESSORIES FOR CHALLENGE PAPER DRILLING MACHINES



### Challenge Power Sharpener

(115 Volt / 60 HZ only)

Cat. No. A-6450

This power drill sharpener plugs into any standard 115 volt, 60 cycle, AC outlet. Handles Challenge and other taper shank drills.

Item	Cat. No.
Replacement Cutting Bit	6469

## HOLLOW DRILL SHARPENER *For fast, easy drill sharpening*



**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.

Here's a unit that really makes drill sharpening easy. All you do is place the hollow drill in the tapered end of the drill holder, insert the unit on the cylinder, then turn two or three times...and you have a perfectly sharpened drill.

This Challenge Hollow Drill Sharpener can pay for itself many times over through longer drill life, easier, faster drilling, and less sharpening time. All sizes of drills from 1/8 to 1/2 inch in diameter can be sharpened.

The drill sharpener automatically puts just the right amount of bevel on the hollow drill for the best drilling results. It's self centering, too, so that the center of the sharpening bit exactly meets the center of the hollow drill. The drill sharpener also has a replaceable sharpening bit.

Item	Cat. No.
Challenge Hollow Drill Sharpener	A-4950
Extra Cutting Bit	4952

### Instructions:

**NOTE:** Always handle carefully.

1. Be sure to wipe off all grease before using the sharpener.
2. Remove any paper chips from the hollow drill.
3. Place the hollow drill in the drill holder section. Insert the sharpening section, being very careful to bring the drill and cutting tool together without bumping.

**NOTE:** The cutting tool is made of a glass hard material and may be chipped by careless handling.

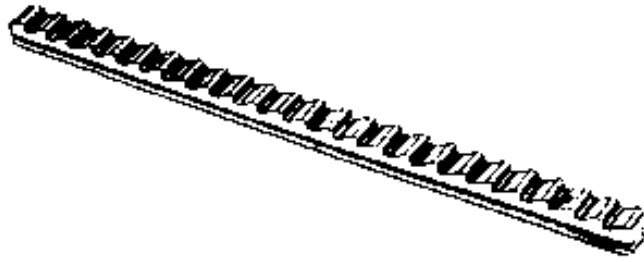
4. Turn the cutting unit clockwise, maintaining an even pressure until the hollow drill is sharpened (usually two or three turns).

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## FIXED GAGES AND EXTRA STOPS

### Challenge Standard Fixed Gages



These fixed gages with pre-cut hole spacings fit on the side guide in place of the movable stops. To use, simply loosen the set screws holding the adjustable stops and slide them out of the way. They may either be removed from the backgage or slid to the extreme right end of the scale where they will be out of the way and cannot become lost. Slide the fixed gage into the backgage from the left end, making sure that the slanted lead for the stops is to the left. 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. Tighten in place with the two set screws. Actual operational use of the stops on the fixed gage is the same as using the adjustable stops.

These 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

Special fixed gages with any desired hole spacing can also be supplied. In ordering be sure to specify the number of stops (holes) and the hole spacing. A sample of the job to be drilled or a drawing of the hole spacings is helpful. Also, specify machine model and serial number.

### Extra Stops

In addition to the stops supplied with each Challenge Paper Drilling Machine, extra stops are available at a nominal price.

Item	Cat. No.
Stop	S-1611-1
Set Screw	H-5938-102404