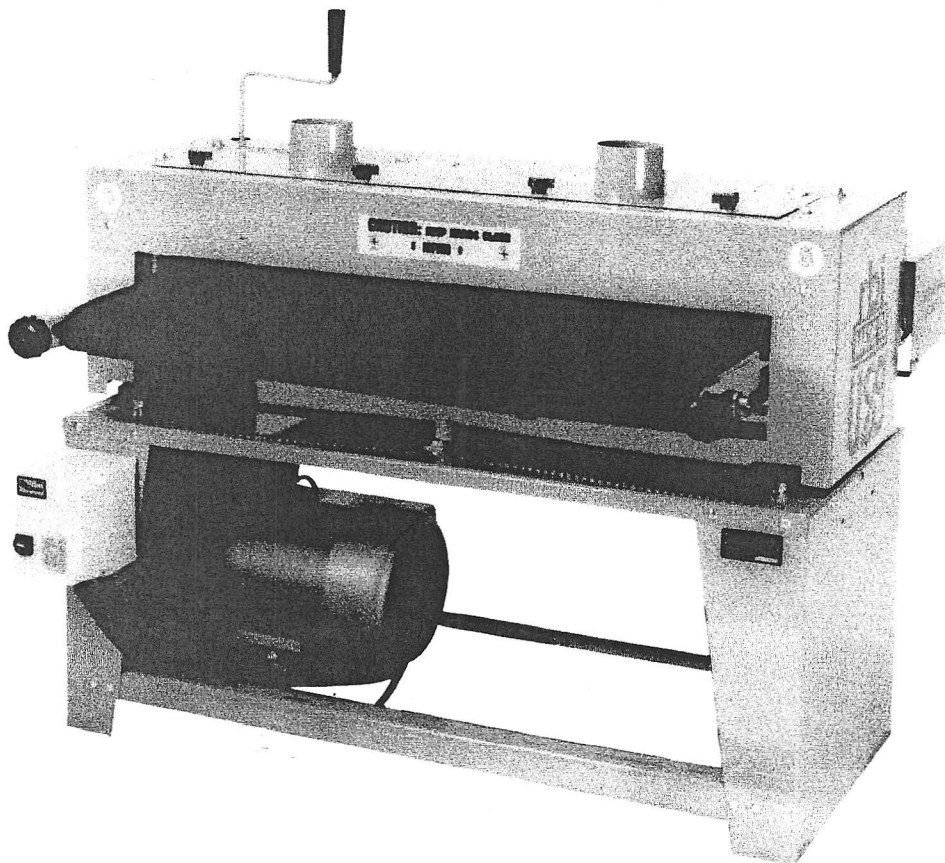


Bushton Manufacturing  
Maker Of  
Hawk Woodworking

# OPERATORS MANUAL

## FOR MODEL 438 DRUM SANDER



**READ THOROUGHLY BEFORE  
OPERATING**



## TABLE OF CONTENTS (MODEL 438 DRUM SANDER)

Foreword .....	3
Specifications .....	3
Safety .....	4
Unpacking Instructions .....	4
Operating Instructions .....	5
Sandpaper Installation .....	5
Using the Abrasive Belt Cleaner .....	6
Adjusting the Conveyor Belt Tension .....	6
Adjusting the Dual V Pulley Belts .....	7
Lubrication .....	7
Adjusting the Sanding Drum Drive Belt .....	8
Table Levelling .....	8
Roller Chain Adjusting .....	8
Trouble Shooting .....	9
Accessories .....	9
Ordering Replacement Parts .....	9
Parts List .....	10
Parts Breakdown .....	11

## FORWARD

The Model 438 Drum Sander is designed for the professional. It is designed for ease of operation, maintenance, and adjustment by the operator with his safety in mind. As with any piece of equipment the operator should become familiar with it. To do this, the operator's manual should be thoroughly read and understood.

**CAUTION: Safety doesn't just happen, it is planned!**  
**Accidents don't just happen, they are caused!**

Read and practice the safety precautions. Follow the instructions provided in the operator's manual.

## SPECIFICATIONS (MODEL 438 DRUM SANDER)

Sanding .....	Max. Depth of Cut Per Pass (5HP Motor, 80 Grit) .....	1/128"
	Max. Width of Stock .....	38"
	Max. Thickness of Stock .....	4"
	Shortest Piece of Stock .....	7"
	Feed Rate (Self Feeding) .....	22 ft/min
Machine Size .....	Machine Width .....	48"
	Machine Length .....	36"
	Machine Height .....	38"
	Machine Weight (without motor) .....	520 lbs
Sanding Drum .....	Diameter (Single Drum) .....	4"
	Ball Bearings (Self Aligning) .....	1-1/2" I.D.
	Speed .....	1070 RPM
Std. Motor .....	Horsepower .....	5 HP
	Voltage .....	220 V
	Phase .....	1 Ph
	Speed .....	1725 RPM
	Weight .....	101 lbs
	Motor Pulley (Diameter For 1725 RPM Motor) .....	3.25 in

**SAFETY**

- 1. Read the operators manual carefully. Be familiar with the operation of the equipment. Know where the controls are and how to operate them.
- 2. Never allow children to operate equipment. Never allow anyone to operate the equipment without proper instruction.
- 3. Keep the work area clear of other persons.
- 4. Maintain a clean uncluttered work area.
- 5. Never make any adjustments while the machine is running.
- 6. Keep hands and feet away from rotating parts. Keep clear of infeed and discharge openings.
- 7. Disconnect the electrical supply before making any adjustments on the machine (unplug the machine).
- 8. Remove all tools and equipment before starting machine.
- 9. Wear proper clothing. Avoid loose fitted clothing, long sleeves, long hair, gloves, neck ties, jewelry, watches, rings, etc.
- 10. Wear safety goggles, ear protection (ear plugs or covers) and a mask in dusty operations.
- 11. To avoid electrical shock do not operate any electrical powered machine in a damp or wet area.
- 12. Maintain all safety guards.
- 13. Do not operate the machine while under the influence of medication, alcohol or drugs.
- 14. Never leave the machine running unattended.
- 15. Don't overload the machine, follow the operators manual.
- 16. Keep the equipment in proper working order. Follow recommended maintenance procedures in operators manual.
- 17. Do not use lumber with loose knots, or splintered surfaces.

**WARNING: Never operate the sander around an open flame as sanding dust can be extremely flammable. Always use a dust collector.**

**UNPACKING AND ASSEMBLY INSTRUCTIONS**

All of our machines are test run, checked, and adjusted at the factory before shipment. Shipping may cause some misalignment. Report all shipping damage to the carrier, not the manufacturer. There is very little assembly required on the model 438 drum sander. The magnetic starter will need to be installed.

**NOTE:** The machine should be set on a solid and level floor.

Tools required are: level, and a 3/8" wrench.

Remove from the shipping carton and check to see that all parts were received without damage. The model 438 drum sander will be shipped in a single crate.

**NOTE:** Damaged parts are to be reported directly to the transportation carrier, the manufacturer isn't responsible for shipping damage.

Crate Contents:	Quantity
A. Drum Sander . . . . .	1
B. Crank (Thickness Adjustment Crank) . . . . .	1
C. Operators Manual (Part #703-0438) . . . . .	1
D. Velcro Tape Wrap (Installed) . . . . .	1
E. 80 Grit Sandpaper Wrap (1 Installed) . . . . .	3
F. 100 Grit Sandpaper Wrap . . . . .	2
G. Abrasive Cleaner Stick . . . . .	1

## OPERATING INSTRUCTIONS

Some woods, such as pine, which have large amounts of gums and resins will load up the sandpaper almost immediately and give poor results. These types of woods are not recommended for sanding. In the same way, painted or varnished wood will load up the sandpaper. Sanding wet or green wood is not recommended.

Use the sander to finish pre-dimensioned boards. A lighter sanding pass will produce a smoother surface.

To remove loaded material from the sandpaper, use the abrasive belt cleaner, see USING THE ABRASIVE BELT CLEANER. This item is an accessory and is not included with the drum sander.

**WARNING: Never operate the sander around an open flame as sanding dust can be extremely flammable. Always use a dust collector.**

1. With the machine turned off, place the board to be sanded under the infeed roller.
2. Raise the table so the board just contacts the roller.
3. Remove the board.
4. Turn the crank up three turns. This will allow the board to be close to the sanding head.
5. Turn the machine on.
6. Begin to move the board straight into the machine.
7. After the board is under the sanding head, slowly raise the table until the board contacts the sanding head.
8. Feed the board through again, **raising the table no more than 1/8 turn of the crank (.0075") for each pass**. A lighter pass will produce a smoother surface. On finer grits of sandpaper make multiple passes before raising the table.

**WARNING: Trying to take off too much per pass will tear up the sandpaper, make the board feed improperly causing gouges in the board, and possibly damage the machine.**

## SANDPAPER INSTALLATION

To install the velcro tape follow the same procedure as sandpaper installation.

1. Disconnect the electrical source (Unplug the machine).
2. Remove old paper, and velcro tape (if bad). If the velcro tape was removed clean the old adhesive from the sanding drum using mineral spirits.
3. Unwind and cut off 15' of sandpaper.

**NOTE:** If there is not velcro tape already installed on your sanding head that will need to be done before proceeding with installing the sandpaper. Unwind and cut off 21' of velcro tape.

4. Wrap the sandpaper around the head one time and mark where it meets the end (see fig. A-1). That should be 12-1/8" for sandpaper and 13" for velcro tape.
5. Remove from the head and mark a line on the diagonal using a straight edge. Then cut on the line (see fig. A-2).

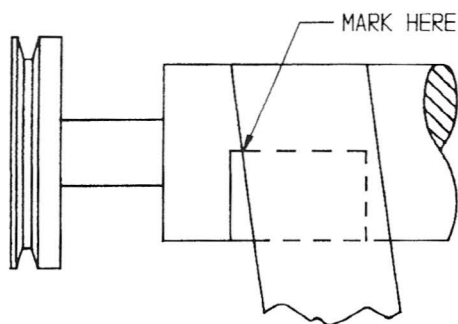


Fig. A-1

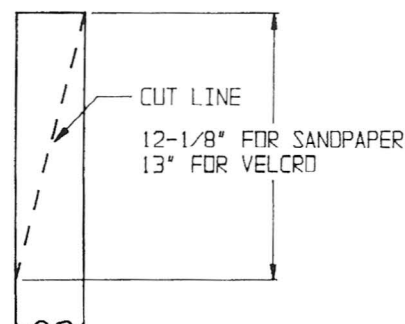


Fig. A-2

6. Apply the sandpaper to the drum in a spiral. Start the cut edge at the drive end of the drum, and turn the drum one revolution (see fig. A-3). Then align with the edge of the sandpaper, and continue to turn the drum (see fig. A-4). Make sure the sandpaper is wrapped tight.

**NOTE:** For the velcro tape, remove the paper from the back of the velcro tape on the cut end to expose the adhesive, then apply the velcro tape to the head in a spiral.

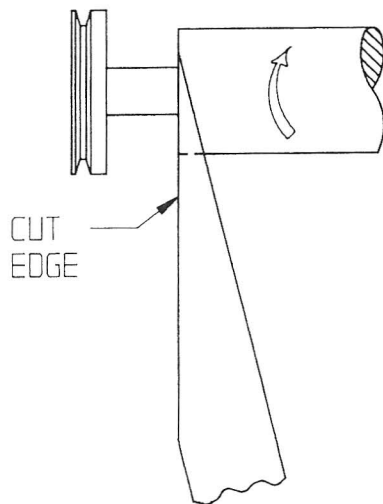


Fig. A-3

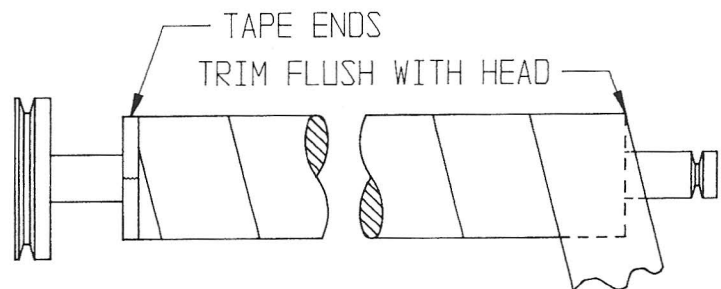


Fig. A-4

7. At the opposite end, trim the sandpaper even with the end of the sanding head.
8. To keep the ends from coming loose, wrap tape around both ends. Fiberglass reinforced packaging tape works good for this.
9. Replace the hood and reconnect the electrical source.

## USING THE ABRASIVE BELT CLEANER

The abrasive belt cleaner is used to remove loaded material from the sandpaper.

**CAUTION:** Never allow your fingers below the hood level. When the abrasive cleaner stick becomes too short, replace it.

1. Remove the wing knobs and open the hood door.
2. Turn the machine on.
3. Lightly touch the abrasive cleaner stick to the sandpaper moving it back and forth across the sanding drum.
4. Turn the machine off.
5. Close the hood door and replace the wing knobs.

## ADJUSTING THE CONVEYOR BELT TENSION

1. Loosen both of the conveyor take-up knobs until there is no more tension on them. Slide the take-up roller to the front of the adjustment slot on both sides.
2. Tighten both of the conveyor take-up knobs by the same amount until the conveyor belt will not easily slip on the rollers when rocked back and forth by hand.

**NOTE:** Over tightening the conveyor belt will pull out the laces and wear the conveyor belt out prematurely.

## ADJUSTING THE DUAL V PULLEY BELTS

Tools Required: 9/16" wrench, 7/16" wrench

The drive belts for the dual v pulleys must be adjusted in a cascading fashion (in succession), with the belt that drives from the sanding drum being first. The belt that actually drives the conveyor belt (the long one) doesn't need adjusting, since it is spring tensioned.

1. Disconnect electrical source, raise the table all of the way up, and remove the hood.
2. With the 7/16" wrench, reach under the table and loosen the bolts in both of the shouldered stub shafts. On the other end of the shouldered stub shafts loosen the bolts that go through the dual V pulley shield and into the stub shafts.
3. Adjust the tension on the first belt (the one from the sanding drum to the first dual V pulley) by pushing the left dual V pulley to the left (see fig. B-1). The shouldered stub shaft will slide in the slots until the first belt is tight. While keeping the belt tensioned, retighten the bolts in that stub shaft.
4. Next adjust the tension on the second belt, which drives from the dual "V" pulley that was just adjusted. To do so push the right dual V pulley up, and retighten the bolts in that stub shaft (see fig. B-1).

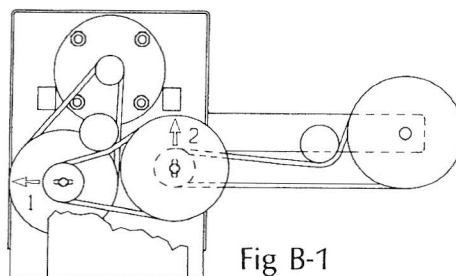


Fig B-1

5. Replace the hood and lower the table enough that the conveyor will not be touching the sanding drum when the machine is started.

## LUBRICATION

1. Oil corner screw & crank screw with 2 - 4 drops at the top and bottom wear washers, and where the screws go through the table, as required for ease of turning the crank handle (see fig. B-2).
2. Oil press roller bronze bushings with 2 - 4 drops on the side of the bronze bushing where it touches the machine frame, and where the shaft goes through the bushing every 20 hours of operation (see fig B-3). Oil more often under severe use.

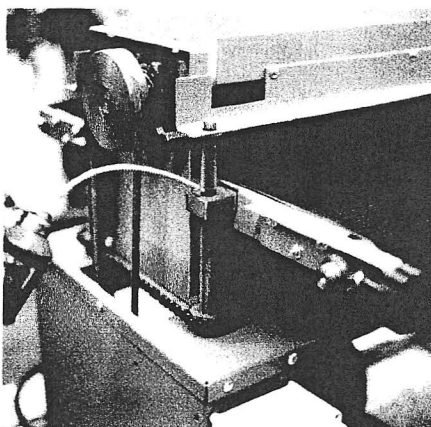


Fig. B-2

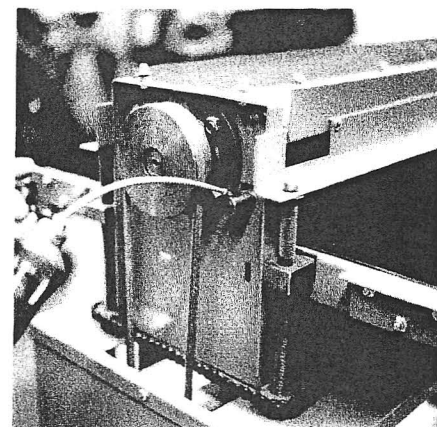


Fig. B-3

3. Oil bronze bushings for the dual "V" pulleys with 2 drops every 8 hours of operation.
4. Electric motor lubrication:
  - A) Sealed bearings - No further lubrication required, bearings are lubricated for the life of the bearing.
  - B) For motors with grease plugs in end plates - Relubricate while motor is warm and at standstill. Remove and clean all grease plugs, insert grease fitting into upper hole adding a small amount of grease with a grease gun. Run motor 5 minutes before replacing plug. Motors with provisions for regreasing should have bearing grease added every 2,000 hours of operation.

**CAUTION: Excessive amount of grease will overheat the bearings.**



## ADJUSTING THE SANDING DRUM DRIVE BELT

**CAUTION:** Loose belts can cause vibration.

1. Loosen the (4) bolts that mount the motor to the machine.
2. Slide the motor to one end of the slots to tighten the belt, retighten the bolts that mount the motor to the machine.

## TABLE LEVELING

Tools Required: needle nose pliers, gauge block.

1. Disconnect the electrical source (unplug the machine).
2. Remove the conveyor belt.
3. Adjust the drum sander table to obtain approximately six inches between the drum sander table and the base top.
4. Set the gauge block on the table and slide it over near the sanding drum.

**CAUTION:** Don't adjust the table with the gauge block directly under the sanding drum.

5. Adjust the table so the gauge block will just touch the sanding drum on one end when slid back and forth under the sanding drum (if the gauge block will just barely touch the sanding drum on both ends the table is level and doesn't need adjusting).
6. Remove the chain connector link (master link) and remove the chain from the corner screw sprockets (see fig B-4).
7. Push down on each corner of the table to check for movement. If any corner moves adjust that corner screw clock-wise until the corner screw sprockets rest evenly on the base top on all corners.
8. Check the distance between the sanding drum and the table on one side then the other. If one side is more than one-sixtyfour lower than the other, turn the two corner screws on the lower side clock-wise by hand until the gauge block will barely touch the sanding drum on both ends when slid under it (be sure and turn both of the corner screws on the lower side by the same amount).

**NOTE:** 1/4 turn of the corner screws clock-wise will raise the drum sander table by 1/64 in.

9. When the table is level replace the chain, being careful not to move the corner sprockets (turning the corner screw sprockets changes the level of the table).

**NOTE:** Oiling the corner screws where they go through the table and at the top and bottom (see lubrication) will make the crank easier to turn.

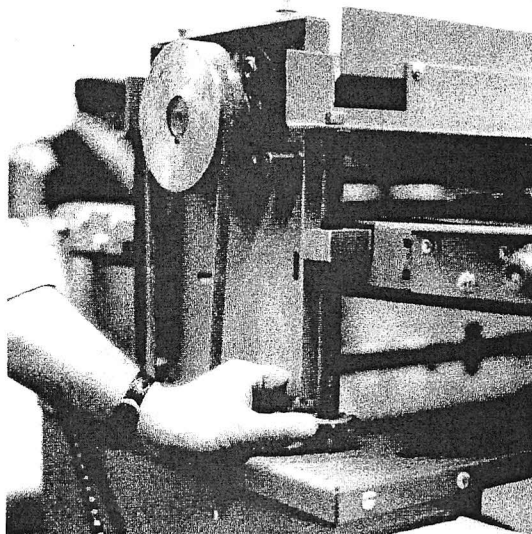


Fig. B-4

## ROLLER CHAIN TIGHTENING

Tools Required: 9/16 in. wrench

1. Loosen the chain tightener.
2. Put the chain to the inside of the bracket with the pointed side of the bracket against the chain.
3. Slide the bracket in until the chain is no longer sloppy and retighten the nut.

**NOTE:** The chain should not be taunt, over tightening the chain will cause it to wear prematurely.

## TROUBLESHOOTING

Problem	Possible causes and solutions
Spits board out	Motor turning the wrong direction, rewire motor to reverse the direction.
Conveyor belt doesn't turn	First check the tension on the conveyor belt, see Adjusting the Conveyor Belt Tension. Then check for belt slippage on the dual V pulleys see Adjusting the Dual V Pulley Belts.
Gouges in board	Too heavy of a cut.
Snipe	A very small amount of snipe is normal .006". If you have excessive snipe try supporting the outer ends of the board as it enters and leaves the machine.

## ACCESSORIES

Part Number	Description
801-2000	Velcro, 2" wide, adhesive backed velcro attaches to the sanding drum. Sold by the foot, 21' of velcro is required to wrap the sanding drum.
All sandpaper is 3" wide, velcro backed for easy reuse. The sandpaper is sold by the foot, and 15' of sandpaper is required to wrap the sanding drum on the 438 drum sander.	
801-2080	80 grit, 3" wide, velcro backed sandpaper.
801-2100	100 grit, 3" wide, velcro backed sandpaper.
801-2150	150 grit, 3" wide, velcro backed sandpaper.
801-2180	180 grit, 3" wide, velcro backed sandpaper.
801-0800	Abrasive cleaner stick, increase the life of your sanding belts by removing loaded material from the sandpaper.

## ORDERING REPLACEMENT PARTS AND ACCESSORIES

To speed delivery and reduce errors when ordering parts always give the name, model number, and serial number of your machine. Use the part number and description as shown in the parts list. Do not use key numbers (the numbers in the circles on the parts breakdown drawing), always use the part number and description given in the parts list.

1. Give complete machine identification.

A. Machine Name \_\_\_\_\_

B. Model Number \_\_\_\_\_

C. Serial Number \_\_\_\_\_

2. Completely identify the part.

(Return the old part if necessary)

A. Part Number \_\_\_\_\_

B. Part Name \_\_\_\_\_

3. State your return address

Your Name \_\_\_\_\_

Company \_\_\_\_\_

Street Address \_\_\_\_\_

Mailing Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

4. Send the order to

### You Can Reach Us

Phone: (620) 562-3557

Fax: (620) 562-3557

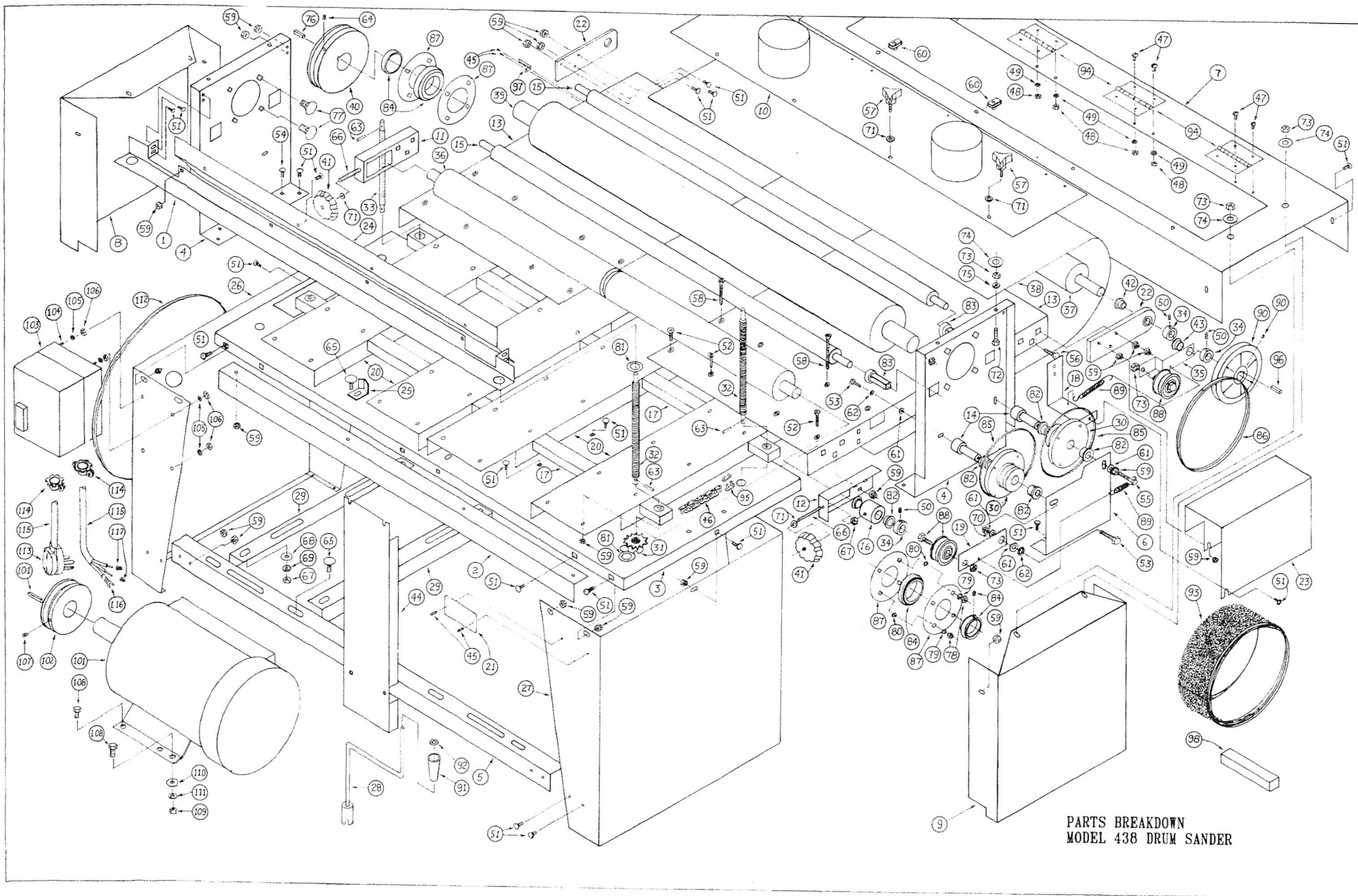
E-mail: jim.bm@hawkwoodworkingtools.com



## PARTS LIST MODEL 438 DRUM SANDER

To speed delivery and reduce errors when ordering parts always give the name, model number, and serial number of your machine. Use the part number and description as shown in the parts list. Do not use key numbers (the numbers in the circles on the parts breakdown drawing), always use the part number and description given in the parts list.

Key #	Part #	Description	Qty.	Key #	Part #	Description	Qty.	Key #	Part #	Description	Qty.
01	638-0004	TOP BAR	2	46	745-0313	#41 ROLLER CHAIN (FEET)	9.33	92	745-0164	PLANER HANDLE RETAINER	1
02	638-0005	BASE TOP BRACE	2	47	745-0106	10-32 X 1/2 RH MACHINE SCREW	16	93	801-2080	80 GRIT SANDPAPER (FEET)	45
03	638-0006	BASE TOP	1	48	745-0107	10-32 HEX NUT	16	93	801-2000	VELCRO, ADHES.BKD (FEET)	21
04	638-0007	SIDES	2	49	715-0191	3/16 INTERNAL LOCK WASHER	16	93	801-2100	100 GRIT SANDPAPER (FEET)	30
05	638-0008	MOTOR SUPPORT BRACE	2	50	770-0083	1/4-20 X 1/4 SOC SS,CUP POINT	5	94	638-0049	4" HINGE	4
06	638-0009	DUAL V-PULLEY SHIELD	1	51	745-0099	1/4-20 X 5/8 CARRIAGE BOLT	69	95	745-0410	#41 CHAIN MASTER CONNECT LINK	1
07	638-0010	HOOD TOP	1	52	738-0046	1/4-20 X 5/8 FLAT SOC.CAP SCR	24	96	645-0712	3/16" X 1" SQUARE KEY	1
08	638-0013	LEFT HOOD END	1	53	750-0206	1/4-20 X 3/4 HEX HEAD BOLT	3	97	695-0049	POINTER, #438 DRUM SANDER	1
09	638-0012	RIGHT HOOD END	1	54	735-0029	1/4-20 X 3/4 CARRIAGE BOLT	4	98	801-0800	SANDING HEAD CLEANER STICK	1
10	638-0015	HOOD DOOR WELDMENT	1	55	735-0052	1/4-20 X 1 HEX HEAD BOLT	1		702-0002	DECAL, RBI MADE IN USA (ROUND)	1
11	638-1016	LH CONVEYOR ADJ. BRACKET	1	56	715-0166	1/4-20 X 1 CARRIAGE BOLT	2		702-0015	DECAL, RBI MADE IN USA	1
12	638-1017	RH CONVEYOR ADJ. BRACKET	1	57	705-1037	1/4-20 X 1 3-PRONG KNOB	4		702-0017	DECAL, CAUTION-KEEP HANDS CLEAR	2
13	638-1022	TABLE	2	58	738-0042	1/4-20 X 2 FLAT HEAD SCREW	16		702-0029	DECAL, COMMERCIAL-MADE IN USA	2
14	638-0024	SHOULDERED STUB SHAFT	2	59	745-0223	1/4-20 FLANGED LOCK/WHIZ NUT	118		745-0202	DECAL, PLANER "UP"	1
15	638-0026	PINCH ROLLER	2	60	738-0041	1/4-20 J-NUT	4		745-0203	DECAL, CAUTION PLANER IN-FEED	1
16	638-0030	CONVEYOR TENSION COLLAR	2	61	745-0177	1/4 FLAT WASHER	6		745-0204	DECAL, CAUTION-KEEP HANDS CLEAR	2
17	638-1031	TABLE CROSS BAR	2	62	750-0207	1/4 SPLIT LOCK WASHER	3		745-0214	DECAL, 4" PLANER SCALE	1
18	638-1033	SPRING ANCHOR BRACKET	1	63	770-0059	1/4 X 1-1/8 ROLL PIN	5	PARTS LIST 5 HP MOTOR PACKAGE FOR MODEL 438 DRUM SANDER			
19	638-0034	IDLER BRKT (STRAIGHT)	1	64	770-0185	5/16-18 X 5/16 SOC.SS,CUP PT.	1	Key #	Part #	DESCRIPTION	QTY.
20	638-1035	TABLE BRACE	4	65	770-0179	5/16-18 X 3/4 CARRIAGE BOLT	6	101	704-0003	5HP/1PH 220V,184 FRAME MOTOR	1
21	738-0040	SERIAL TAG, #438 DRUM SANDER	1	66	750-0205	5/16-18 X 3 THREADED ROD	2	102	638-0038	MOTOR PULLEY	1
22	638-2018	DRIVE ROLLER BRACKET	2	67	770-0081	5/16-18 HEX NUT	8	103	745-0692	MAGNETIC 3 PHASE SWITCH	1
23	638-2021	CONVEYOR DRIVE SHIELD WELDMENT	1	68	745-0150	5/16 FLAT WASHER	6	104	705-0084	10/32 X 3/4 RND HD MACH SCREW	4
24	638-1032	DUST DEFLECTOR	2	69	770-0178	5/16 SPLIT LOCK WASHER	6	105	715-0191	3/16 INTERNAL LOCK WASHER	8
25	645-0045	CHAIN TIGHTENER	2	70	745-0158	5/16ID X 1/2OD X 3/16 SPACER	1	106	745-0107	10-32 HEX NUT	8
26	645-5270	LEFT SKIRT	1	71	715-0103	1/4IDX3/4ODX1/16" NYLON SPACER	6	107	770-0185	5/16-18 X 5/16 SOC.SS,CUP PT.	1
27	645-1271	RIGHT SKIRT	1	72	770-0018	3/8-16 X 1-1/4 HEX HEAD BOLT	4	108	750-0202	3/8-16 X 1 HEX HEAD BOLT	4
28	645-0279	CRANK WELDMENT	1	73	770-0058	3/8-16 HEX NUT	10	109	770-0058	3/8-16 HEX NUT	4
29	645-0281	MOTOR MOUNT BAR	2	74	770-0050	3/8 FLAT WASHER	10	110	770-0050	3/8 FLAT WASHER	4
30	645-0153	DUAL V-PULLEY ASSEMBLY	2	75	770-0071	3/8 SPLIT LOCK WASHER	4	111	770-0071	3/8 SPLIT LOCK WASHER	4
31	665-0004	SPROCKET	4	76	770-0089	3/8 X 3/8 X 1 SQUARE KEY	2	112	745-0671	V-BELT #6858, 1/2 X 58	1
32	665-1005	CORNER SCREW	3	77	770-1068	1/2-13 X 1" CARRIAGE BOLT	8	113	708-0008	EAGLE PLUG 230V, 50 AMP	1
33	665-1034	CRANK SCREW	1	78	770-0069	1/2-13 HEX NUT	8	114	745-0693	STRAIN RELIEF	3
34	695-0025	COLLAR	4	79	745-0011	1/2 SPLIT LOCKWASHER	8	115	745-0700	WIRE, 10-3 AMERICAN WIRE GAUGE	13
35	695-1046	IDLER ARM BRKT	1	80	745-0131	1/2 X 7/8 X .020 NYLON SPACER	8	116	745-0681	TERMINAL,SPADE,YELLOW	3
36	638-1002	TAKE UP CONVEYOR ROLLER	1	81	740-0549	5/8ID X 1-1/8OD X 18 GA.WASHER	8	117	745-0679	WIRE NUT, RED	3
37	638-1003	DRIVE CONVEYOR ROLLER	1	82	740-0368	5/8ID FLANGED BRONZE BUSHING	8				
38	738-1023	CONVEYOR BELT	1	83	765-0057	5/8ID FEED ROLLER BUSHING	4				
39	738-1001	38" SANDING DRUM	1	84	760-0002	1.5" BEARING & COLLAR	2				
40	608-1010	5-1/4" OD SANDING HEAD PULLEY	1	85	745-1683	V-BELT #7240 GATES XL	2				
41	638-0043	CONVEYOR TAKE-UP KNOB	2	86	738-2039	V-BELT, 3/8 X 35	1				
42	638-0044	3/8" LG FLANGED BUSHING	2	86	738-1039	V-BELT #7365 GATES XL	1				
43	638-0045	1/4" LG FLANGED BUSHING	1	87	745-0010	FLANGETTE 4-BOLT	4				
44	664-0001	CENTER LEG	2	88	745-0062	IDLER PULLEY 2"	2				
45	770-0052	#4 X 1/4 ROUND HD DRIVE SCREW	4	89	745-0063	IDLER ARM TENSION SPRING	2				
				90	745-2091	FEED ROLLER PULLEY - KEYED	1				
				91	745-0149	PLASTIC HANDLE GRIP	1				



PARTS BREAKDOWN  
MODEL 438 DRUM SANDER

PARTS BREAKDOWN  
MODEL 438 DRUM SANDER