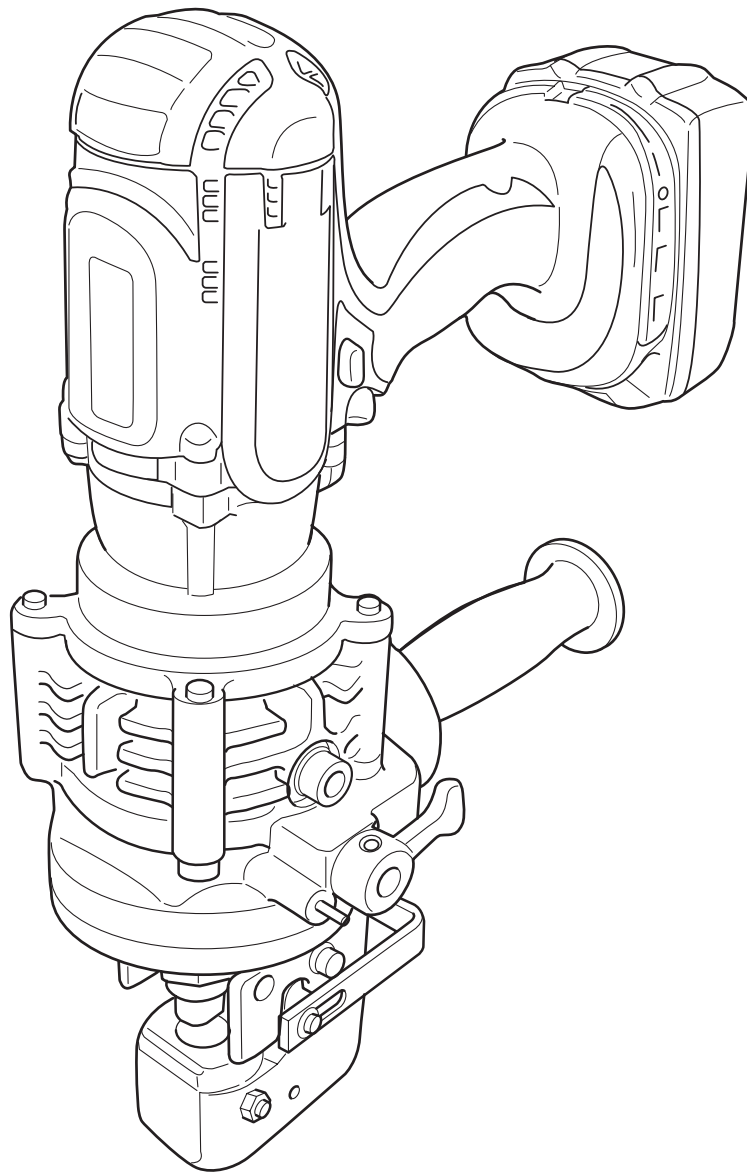


# ***Hougen***<sup>®</sup>-Ogura<sup>™</sup>

## **MODEL 76000 PUNCH PRO<sup>™</sup> 18V CORDLESS ELECTRO-HYDRAULIC HOLE PUNCHER**

### **OPERATOR'S MANUAL**

COVERS HOLE PUNCHER PART NUMBERS 0760101 & 0760201



**Before operating this machine, read, understand and follow all instructions and operating procedures. Keep this Operator's Manual with the machine.**

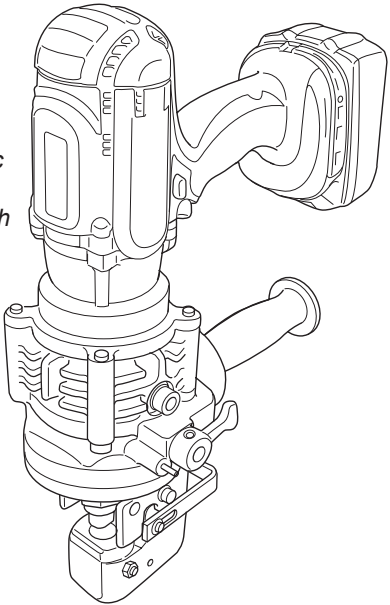
**HOUGEN®- OGURA™**

**Electro-Hydraulic Hole Puncher**  
**Model 76000**

**Wecome to Hougen**

*Congratulations on your purchase of the Hougen-Ogura 18V Cordless Electro-Hydraulic Hole Puncher. Your model is designed to produce superior holes quickly and effeciently. Through constant innovation and development, Hougen is committed to provide you with hole-producing tools and products to help you be more productive.*

*Before attempting to operate your new Electro-Hydraulic Hole Puncher, please read all instructions first. These include the Operator's Manual and Warning Label on the unit itself. With proper use, care, and maintenance, your model will provide you with years of effective hole punching performance. Once again, thank you for selecting our product and welcome to Hougen.*



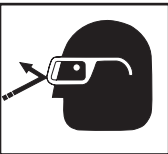
**Specifications**

- Motor .....DC Magnet Motor
- Battery .....Lithium-ion 18V D.C.
- Max Throat Depth .....1.02" (26mm)
- Shape of Holes .....Round / Oblong
- Max Hole Size & .....19/32" Dia./15/64" Thick for mild steel of 65,000 psi tensil strength
- Thickness Size .....19/32" Dia./15/64" Thick for stainless steel of 89,000 psi tensil strength
- Punching Speed .....4 seconds
- Dimensions.....14-1/2" L x 4-13/16" W x 10-19/32" H
- Weight .....16.5 lbs (7.5 kg) including battery

**INDEX**

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**SAFETY FIRST**



Always wear eye protection while using punching tools, or in the vicinity of punching.



**CAUTION!** Risk of pinching or crushing. Keep away from moving parts when unit is in use.



**CAUTION!** The slug is ejected at the end of the punch. Do not aim the unit so that ejected slug may hit someone around, or below you.



**CAUTION!** To prevent electric shock, do not use power tools near wet areas, or where power tool may become wet.

# Important Safety Instructions



## WARNING

- 1. Before use, read this Instruction Manual thoroughly.**  
Do not expose the charger and battery to rain or use them in damp or wet locations, as this may cause overheating or electric shock.
- 2. Keep work area clean.**  
Cluttered areas and benches invite injuries.
- 3. Keep the work area well lighted.**  
Working where there is insufficient light may cause an accident.
- 4. Keep children away.**  
Do not allow children or unauthorized personnel to handle tool.
- 5. Store idle tools.**  
When not in use, tools should be stored in a dry and secure place. Keep out of reach of children.
- 6. Do not force tool.**  
It will do the job better and safer at the rate for which it was intended. Do not force tool to work beyond its ability. Excessive load will cause seizure of the motor, overheating, smoke and fire.
- 7. Use right tool.**  
Do not force small tool or attachment to do the job of a heavy-duty tool.
- 8. Wear safety glasses and protective clothing.**  
Always wear safety glasses, safety footwear, safety gloves, and any other mandated or necessary protective clothing while using this equipment. Failure to do so may result in injury.
- 9. Dress properly.**  
Do not wear loose clothing or jewelry as they can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair.
- 10. Hold tool securely.**  
A tool that is not held securely may injure you. Use clamps or a vice to hold the work. This frees both hands to properly hold, control, and operate the tool. Failure to properly secure the work may result in injury.
- 11. Disconnect the tools power supply, by removing the battery and engaging the Trigger Switch Lock, whenever one of the following situations occur:**  
The tool is not in use or is being serviced, any parts such as a blade, are being replaced. There is a recognized hazard. Failure to do so may result in unexpected operation and damage or injury.
- 12. Avoid unexpected operation.**  
Do not carry the tool by the Trigger Switch as this may cause unexpected operation and damage or injury.
- 13. Do not abuse power cord.**  
Never carry battery charger by its power cord or pull on the cord to disconnect it. Keep cord away from heat, oil and sharp objects. Place cord so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress. If the tool is dropped or struck, check carefully that the body is not damaged, cracked, or deformed.
- 14. Do not overreach.**  
Keep proper footing and balance at all times.
- 15. Maintain tools carefully.**  
Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect battery charger power cord periodically and, if damaged, have it repaired by Hougen Manufacturing, Inc. Keep handles dry, clean, and free from oil and grease.
- 16. Remove keys and wrenches.**  
Form habit of checking to see that keys and wrenches are removed from tool before starting operation.
- 17. Stay alert when using electric tools.**
  - Consider safety of others.
  - Operate tool with care.
  - Watch what you are doing.
  - Use common sense.
  - Do not operate tool when you are tired.
- 18. Check for damaged parts.**
  - Before using the tool, carefully check all parts for damage, including guards, to ensure that they will operate properly and perform their intended function.
  - Check for any misalignment or binding of moving parts; damaged or broken parts and mountings; and any other conditions that may affect its operation.
  - Do not use battery charger if electric plug or cord is damaged or if it was dropped or damaged in any way.
  - A guard or other part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated in this instruction manual.
  - Do not use tool if switch does not turn it on and off. Have damaged or defective switch replaced by Hougen Manufacturing, Inc.
- 19. Service at Hougen Manufacturing Only.**  
Service this electric appliance in accordance with the relevant safety regulations. Repairs to electric appliances should only be done by a qualified person. Repairs by others may endanger the user. Contact Hougen Mfg., Inc. to arrange servicing.
- 20. Only use the specified accessories or attachment.**  
Use only the specified accessories or attachment described in this Instruction Manual and the Ogura catalog. Use of any other accessories or attachments may result in an accident or injury.

# Important Safety Instructions



## WARNING

1. Proper selection of the punch and the die is essential. Select the correct punch and die according to the hole shape, size of hole, material thickness and material type.
2. Ensure that any punch with stepped edge to prevent free rotation is installed correctly in the punch piston before tightening the punch retaining nut.
3. For punching channel and stainless steel, use the die provided exclusively for these materials. Only select a suitable punch & die combination that is correct for the material thickness.
4. Ensure the punch and the die are firmly fixed in position with the nut or the bolt. Failure to do so may cause serious damage to your tool and serious personal injury. Regularly check and tighten the punch and die.
5. The tool is electro-hydraulic. When the temperature is cold it should run for a few minutes and idle before starting operations.
6. Keep face, hands and other parts of the body away from the punching area during operation.
7. Remove battery before changing the punch and the die or when servicing or making adjustments.
8. The punch and the die that become worn, deformed, nicked, broken or damaged in any way may cause a tool breakdown and a serious accident. Replace them immediately with new ones supplied from Hougen Manufacturing, Inc.
9. When punching stainless steel, the punch and die may wear earlier than would be the case with softer materials. Ensure that the punch and die are in good condition, free from wear and are not deformed, nicked, broken or damaged in any way. Check with your dealer before punching any material not listed in the specifications.
10. Remove and check the carbon brushes regularly. Replace them after 200 times of uses. Carbon brushes with a length of about 6mm or less may cause damage to the motor.
11. When using the tool continuously, its temperature can exceed 70 degrees, which may cause lower performance. In this case, stop operating for about 1 hour to allow the tool to cool down before using it again.

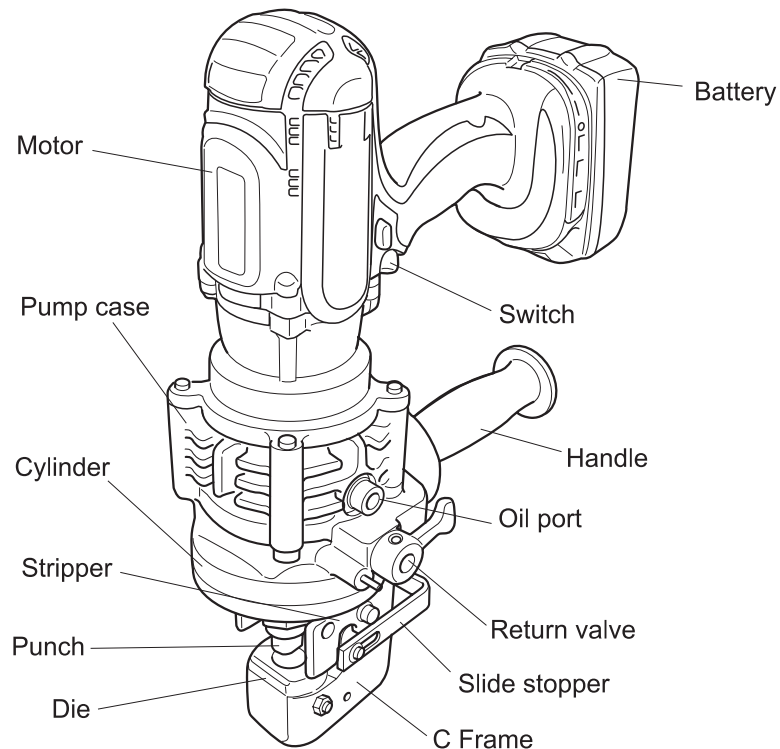


## CAUTION

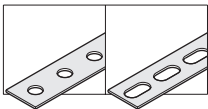
1. **Do not cover or clog the motor air vents as this may cause the motor to overheat, resulting in smoke, fire and explosion.**
2. **This tool is a hydraulic tool powered by electricity. When the temperature is low, hydraulic oil may become solid and tool cannot perform well. Idle tool for a few minutes before use.**
3. **As the oil reservoir was filled before delivery, do not add oil unless the tool works abnormally.**
4. **When using an extension cord with the charger, it is recommended to use a cord with the cross section below and with a length as short as possible. For charging outdoors, use a cab type extension cord.**

LENGTH OF CORD IN FEET							
115V	25 FT.	50 FT.	100 FT.	150 FT.	200 FT.	250 FT.	300 FT.
5-6	18	16	14	12	10	10	8
6-8	18	16	12	10	10	8	6
8-10	18	14	12	10	8	8	6
10-12	16	14	10	8	8	6	6
12-14	16	12	10	8	6	6	6
14-16	16	12	10	8	6	6	4

# 76000 CORDLESS HOLE PUNCHER

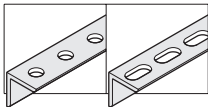


## FLAT BAR



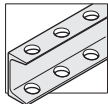
MAX  
2" wide X .23 thick  
(CENTER PUNCHING)

## ANGLE STEEL



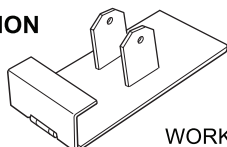
MIN  
1" X 1" X .11 thick  
MAX  
2" X 2" X .23 thick

## CHANNEL

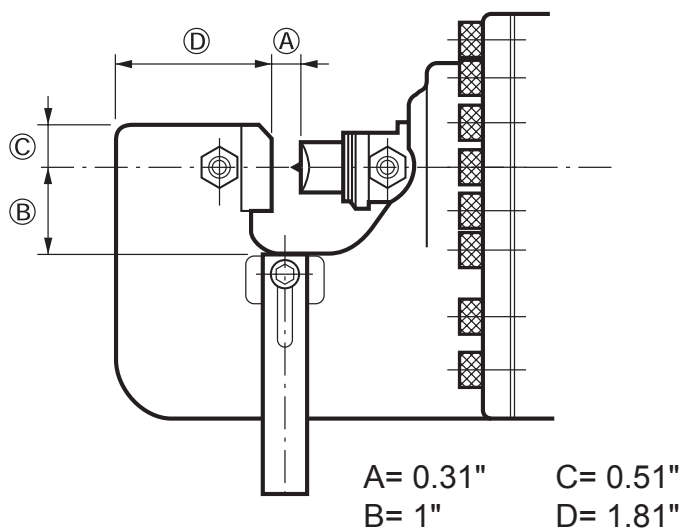


MIN 3" X 1.57"  
MAX 4" X 2"  
(FLANGE PUNCHING)

## OPTION



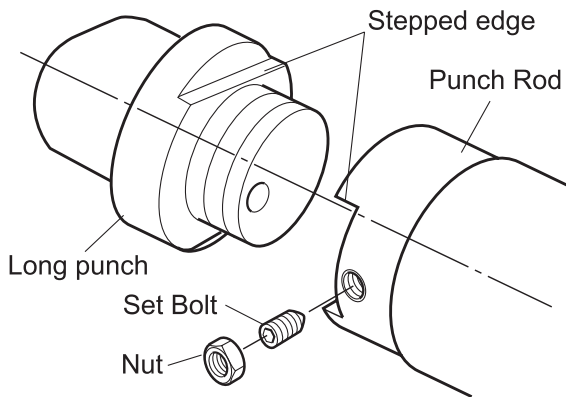
WORK STAND



## PUNCH & DIE REPLACEMENT PROCEDURE

### CAUTION

Before replacing the punch and die, ensure that the machine is disconnected from its power source to prevent accidental operation and personal injury.



### WARNING

*Make sure that the punch is seated properly in the punch piston. Failure to do so may cause serious damage to the tool and may cause personal injury. When installing the oblong punch, make sure the orientation is correct and that the stepped edge of the punch is correctly positioned in the punch piston before securing it with the set bolt and nut.*

*For punching flanges (fillets) in channel steels, use the die with a beveled edge. Using the wrong die may cause serious damage to the tool, punch and die.*

1. Be sure that the punch piston is fully retracted and remove one of the strippers to make access to the parts easier.
2. The punch must be removed first and then the die. Remove the set bolt and the nut securing the punch and the die. Insert the hex wrench supplied through the hole of the stripper and undo the set bolt. The set bolt can be released without removing the stripper.

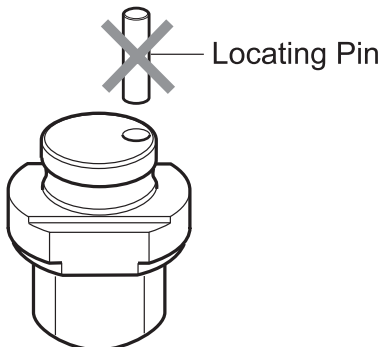
**Note: When replacing the punch and the die make sure that the correct size, thickness and hole shape is selected. Shaped punches and dies must be properly aligned with each other.**

3. The die must be installed first. Place it in the C-frame in the proper orientation. Secure firmly with the set bolt and tighten the nut.
4. Insert the new punch into the punch piston. Secure firmly with the set bolt and tighten the nut to prevent the set bolt from coming loose.

**Note: When installing a punch with a stepped edge (anti rotation), make sure the orientation is correct and that the stepped edge is correctly positioned in the punch piston.**

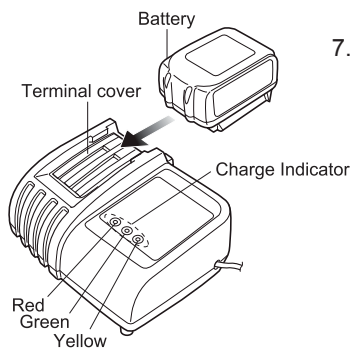
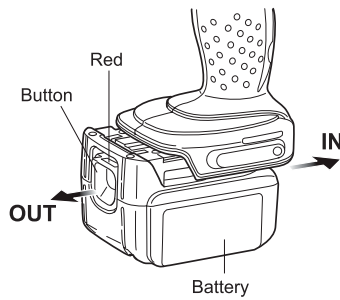
5. Replace the stripper.

## OBLONG PUNCH PROCEDURE



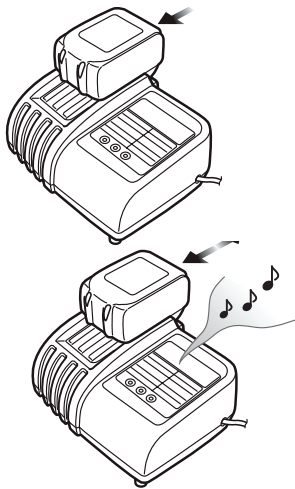
The locating pin which is supplied with the oblong punch can not be used with the Model 76000. Use the punch without installing the locating pin.

## BATTERY CHARGE



1. Plug the battery charger into the proper AC voltage source. Charging light will flash in green color repeatedly.
2. Insert the battery cartridge into charger. The terminal cover of the charger can be opened when inserting and closed when removing the battery cartridge.
3. When the battery cartridge is inserted, the red charging light will light up and charging will begin.
4. When the battery is fully charged, a preset tone will play and the charging light will change from red to green.
5. If you leave the battery cartridge in the charger after the charging cycle is complete, the charger will switch into its "maintenance charge" mode which will last approximately 24 hours.
6. Charging times vary by temperature (10°C (50°F) - 40°C (104°F)) and condition of the battery.
7. After charging, remove the battery cartridge from the charger and unplug the charger from the power source.

- The battery charger is for charging the Hougen-Ogura battery cartridge. Never use it for other purposes or for other manufacturer's batteries.
- If you charge a battery cartridge from a just operated tool or one which has been left in a location exposed to direct sunlight for a long time, the charging light may flash in red color. If this occurs, charging will begin after the battery cartridge is cooled by the cooling fan that is in the charger.
- If the charging light flashes alternately in green and red color, charging is not possible. The terminals on the charger of battery cartridge are clogged with dust or the battery cartridge is worn out or damaged.



## CHANGING TONE/MELODY OF CHARGER

1. When inserting the battery cartridge onto the charger, it will play the last preset tone/melody that was selected.
2. Remove and reinsert the cartridge with in 5 seconds to change the tone.
3. When the desired tone/melody comes out, leave the cartridge inserted.
4. Preset tone/melody remains stored even when the charge is unplugged.

## COOLING SYSTEM

- This charger is equipped with a built-in cooling fan for faster charging without damaging the battery.
- A yellow warning light will flash in the following cases: Trouble with fan and incomplete cool down of battery, or vents are clogged with dust.
- The battery can be charged in spite of the yellow warning light, but the charging time will be longer than usual.

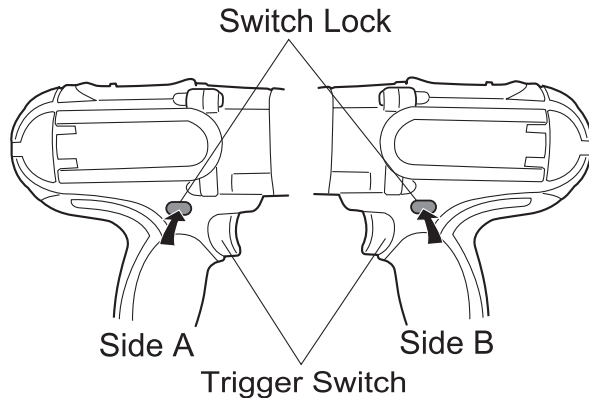


## OPERATING PROCEDURE

### **WARNING**

Before the battery is inserted in to the motor, pull and release the Trigger Switch to ensure that the Trigger returns when released.

- If the Trigger Switch does not work correctly it may cause an accident.
- The motor is ON when the Trigger Switch is pulled and OFF when released.



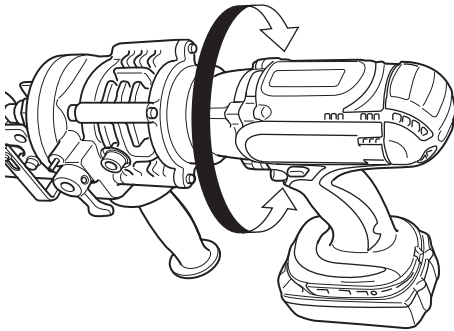
### **How to use the Switch Lock**

- Push in the Switch Lock on side A. The switch is unlocked and the Trigger can be pulled.
- Push in the Switch Lock on side B. The switch is locked and the Trigger cannot be pulled.

### **CAUTION**

The Trigger Switch should be locked at all times when not in use.

## MOTOR FUNCTION

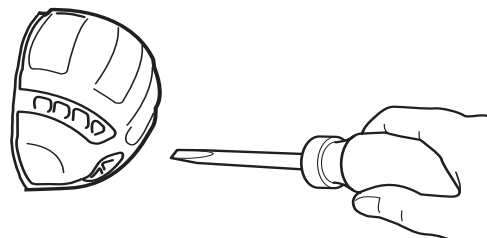
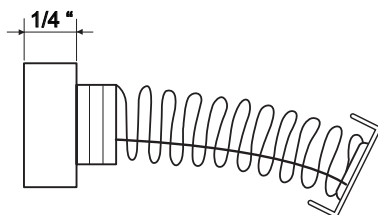


The motor body can be rotated 360 degrees, in either direction, during operation. This feature is particularly useful when working in awkward or narrow areas, as it allows the operator to position the tool for easy operation.

## CARBON BRUSH REPLACEMENT

When the carbon brushes become less than 1/4", the motor force deteriorated because of low rectification. Carbon Brushes need to be replaced. Replacement Part No. 76024

1. Remove the carbon brush cap on the motor frame using a standard screwdriver.
2. Replace the carbon brushes with new ones.
3. Put caps back on.

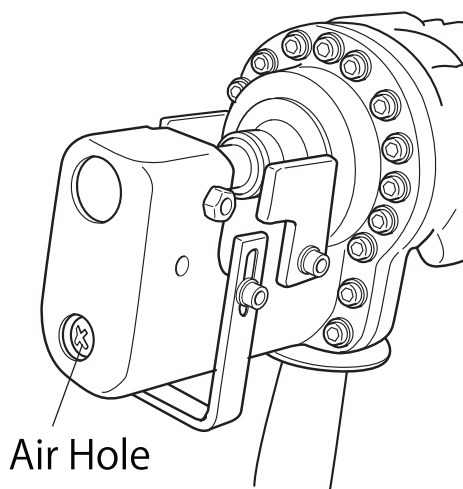




## ADDING OIL

The Cordless Hole Puncher is electro-hydraulic. When shipped from the factory, it was filled with oil. Do not attempt to add oil as long as the tool performs well. When the oil-pressure is not enough for the operation, add the oil as follows. Make sure that the work area and all equipment are clean so that no dirt, dust or other foreign material can get into the hydraulic oil or pump area.

1. Locate the socket head cap screw that plugs the oil port. It is just above the manual return lever on the right hand side of the Hole Puncher.
2. Lay the Hole Puncher on its left side so that the oil port is facing up.
3. Turn on the switch to move the Punch position almost to the bottom of its stroke. If necessary, cycle the punch several times to determine where the bottom of the stroke is, and to correctly position the Punch piston. In this position, the maximum amount of oil has been drawn from the pump and the correct fill can be obtained.
4. Carefully open the oil port by removing the socket head cap screw.
5. Using the small squeeze bottle supplied with the Hole Puncher, carefully add hydraulic oil to completely fill the reservoir. Lock the Hole Puncher back and forth several times to free any trapped air bubbles. Then add additional oil if necessary.
6. Replace the cap screw and wipe up any excess oil.
7. Cycle the Hole Puncher several times with the Manual Return Valve open, and again with the valve closed, to work any trapped air out of the system. Then repeat the above procedure, making sure that the punch piston is almost at the bottom of its stroke before removing the cap screw from the oil port.
8. Add additional oil as necessary. If the unit was extremely low on oil, it may be necessary to repeat the procedure several times.

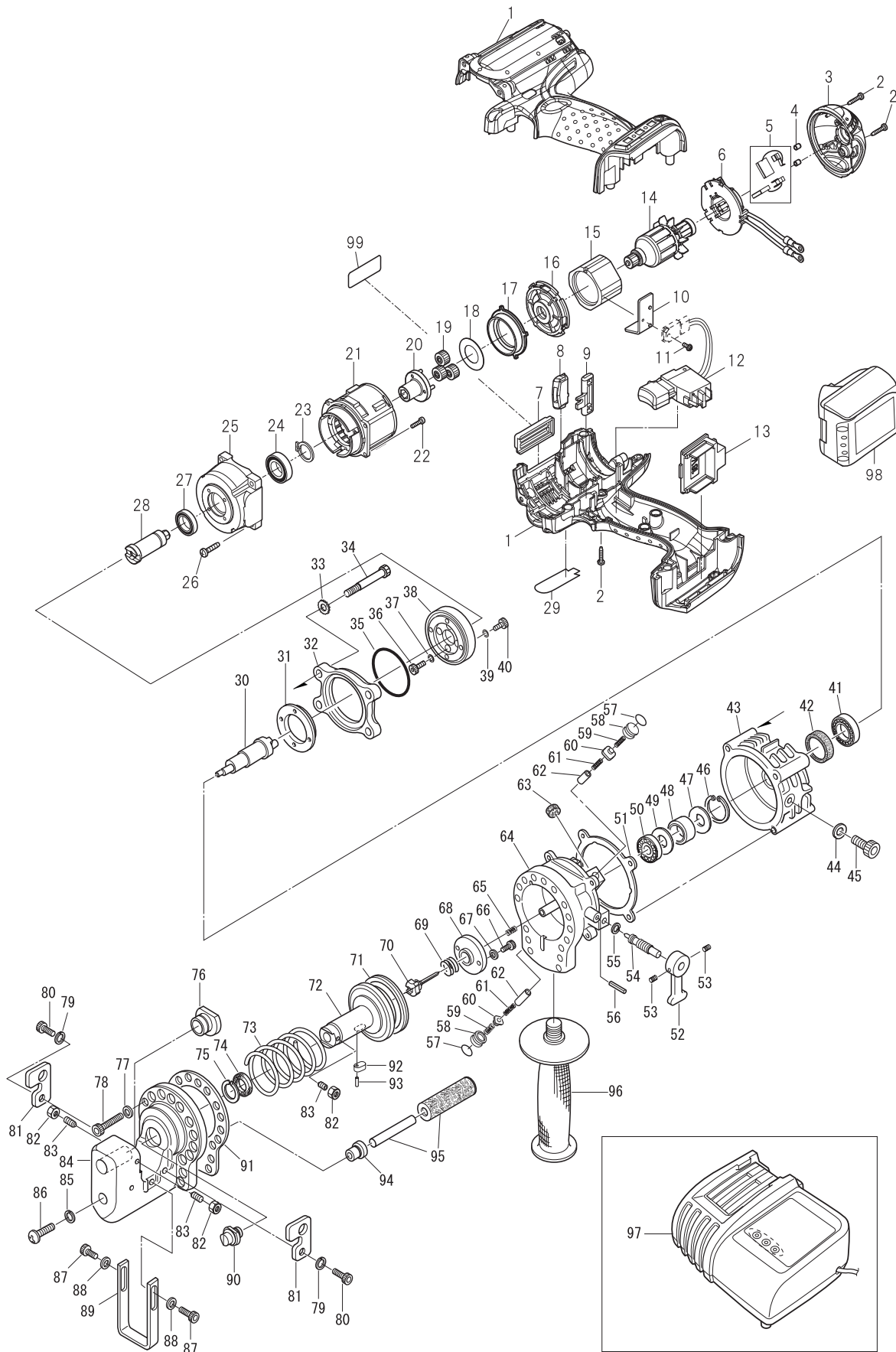


### CAUTION

- Only pure hydraulic oil should be used in this tool. Recommended oils include the supplied hydraulic oil, Super Hyrando #46 (Nippon Oil Corporation); Shell Tellus Plus #46 (U.S. Shell); or equivalent spec anti-wear hydraulic oil, ISO Viscosity Grade 46. Do not use other oils as these may cause damage to the seals and other internal machine parts.

- Keep the air hole at the end of the C Frame clear of dirt. The air hole should be open for controlling the hydraulic pressure.

# 76000 PARTS BREAKDOWN



# 76000 PARTS LIST

Item	Part #	Description	Qty	Item	Part #	Description	Qty
1	76020	Motor Case w/ Label	1	41	75087	Ball Bearing	1
2	76021	Self Tap Screw 3mm X 16mm	10	42	75084	Oil Seal	1
3	76022	Rear Housing Cover	1	43	76059	Pump Case	1
4	76023	Pin	2	44	75090	Washer Seal	1
5	76024	Carbon Brush	1 pair	45	75107	Bolt M10 X 15	1
6	76025	Brush Holder Assembly	1	46	76108	Stop Ring	1
7	76110	Housing Cover	1	47	76107	Needle Holder	2
8	76027	Lens	1	48	76106	Needle Bearing	1
9	76109	Lock Lever	1	50	76105	Ball Bearing	2
10	76029	Unit Plate	1	51	76104	Liner B - Gasket	1
11	76030	Pan Head Screw M3 X 8	1	52	75047	Return Lever	1
12	76031	Trigger Switch Assembly	1	53	75160	Bolt M6 X 8	2
13	76032	Terminal	1	54	75046	Return Valve	1
14	76033	Armature w/ Bearing	1	55	75085	O-Ring	1
15	76034	Field	1	56	75100	Spring Pin	1
16	76035	Motor Bracket	1	57	75326	O-Ring	2
17	76036	Internal Gear 46 tooth	1	58	75325	Packing Rubber Seal	2
18	76037	Flat Washer 18	1	59	75052	Check Valve Spring	2
19	76038	Super Gear 16 tooth	3	60	76066	Check Valve	2
20	76039	Carrier	1	61	76067	Piston Return Spring	2
21	76040	Gear Case	1	62	76068	Pump Pistons ( <i>see note 1 below</i> )	2
22	76041	Pan Head Screw M3 X 12	4	63	75054	Magnet	2
23	76042	Stop Ring	1	64	76079	Cylinder	1
24	76043	Ball Bearing	1	65	75045	Release Valve Spring	1
25	76044	Gear Case	1	66	75102	Bolt M4 X 6	2
26	76045	Tap Screw M4 X M20	4	67	76070	Washer	2
27	76046	Ball Bearing	1	68	76071	Stop Plate	1
28	76047	Spindle	1	69	76072	Valve Return Spring	1
29	76048	Name Plate	1	70	76073	Release Valve	1
30	76049	Eccentric Shaft	1	71	76074	Packing	1
31	76050	Thrust Flange	1	72	76075	Cutter Rod	1
32	76051	Motor Flange	1	73	76076	Cutter Rod Return Spring	1
33	76052	Washer	4	74	75153	Rod Seal Packing	1
34	75361	Bolt M5 X 55	4	75	75152	Back up Ring	1
35	76053	O-Ring	1	76	<b>See Punch &amp; Die Chart for correct Die</b>		
36	76054	Bolt HB4 X 15	4	77	75872	Washer	17
37	76055	Washer	4	78	75351	Bolt M6 X 18	17
38	76056	Flange Mounting Plate	1	79	76078	Washer	2
39	76057	Washer	4	80	75156	Bolts M6 X 15	2
40	76058	Bolt HB4 X 15	4	81	76079	Stripper	2

**Note 1: Pump Pistons have sizes A-H and should be sized for correct fit at Hougen Mfg.**

## 76000 PARTS LIST

Item	Part #	Description	Qty	Item	Part #	Description	Qty
82	<b>75091</b>	Nut NW6-1	3	90	<b>See Punch &amp; Die Chart for correct Punch</b>		
83	<b>76080</b>	Bolt M6 X 18	3	91	<b>76088</b>	Gasket	1
84	<b>76081</b>	C - Frame	1	92	<b>75059</b>	Punch Piston Key	1
85	<b>76111</b>	Washer	1	93	<b>75099</b>	Roll Pin	1
86	<b>75092</b>	Retaining Screw	1	94	<b>76090</b>	Bushing	1
87	<b>76083</b>	Bolt M5 X 12	2	95	<b>75059</b>	Punch Rod - key	1
88	<b>76084</b>	Washer	2	96	<b>75063</b>	Carry Handle	1
89	<b>76085</b>	Slide Stopper	1	99	<b>76095</b>	Caution Label	1

### Standard Accessories with the 76000 Cordless Hole Punch

Item	Part #	Description	Qty	Item	Part #	Description	Qty
97	<b>76093</b>	Battery Charger (115V)	1		<b>75742</b>	3mm Hex Wench	1
	<b>76473</b>	Battery Charger (230V)	1		<b>75743</b>	4mm Hex Wrench	
98	<b>76094</b>	Battery	1		<b>75744</b>	5mm Hex Wrench	1
	<b>76096</b>	Carrying Case	1		<b>75746</b>	8mm Hex Wrench	1
	<b>76097</b>	Foam Insert	2		<b>76103</b>	Spanner Wrench 8mm X 10mm	1
	<b>76098</b>	Battery Cover	1		<b>75376</b>	Hydraulic Oil #46 1 gallon	

The 76000 comes with 35cc of #46 oil in a small bottle

### Optional Accessories for the 76000 Cordless Hole Punch

	<b>75166</b>	Work Stand	1
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# 76000 PUNCHES & DIES

ROUND PUNCH				MATERIAL		DIE	
Nominal	Size		Part No.	Thickness	Style	Size	Part No.
	Actual	Metric					
5/32"	.157	4mm	76200	5/64 (.078) 14 GA.	F, A	Die 5/32 A	76204
3/16"	.197	5mm	76201	5/64 (.078) to .118 14 to 12 GA.	F, A	Die 3/16 A	76205
7/32"	.217	5.5mm	76202	5/64 (.078) to .118 14 to 12 GA.	F, A	Die 7/32 A	76206
15/64"	.236	6mm	76203	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 15/64 A	76207
				>1/8 (.125) to 5/32 (.157) 10 to 9 GA.	F, A	Die 15/64 B	76216
1/4"	.256	6.5mm	75421	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 1/4 A	76208
				>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 1/4 B	76217
5/16"	.315	8mm	75422	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 5/16 A	76209
				>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 5/16 B	76218
11/32"	.335	8.5mm	75423	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 11/32 A	76210
				>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 11/32 B	76219
3/8"	.394	10mm	75424	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 3/8 A	76211
				>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 3/8 B	76220
7/16"	.433	11mm	75425	19/64 (.276) max.	C	Die 3/8 C	76245
				5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 7/16 A	76212
15/32"	.472	12mm	76356	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 7/16 B	76221
				19/64 (.276) max.	C	Die 7/16 C	76246
1/2"	.512	13mm	75426	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 15/32 A	76357
				>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 15/32 B	76358
9/16"	.551	14mm	75427	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 1/2 A	76213
				>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 1/2 B	76222
19/32"	.591	15mm	76248	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 9/16 A	76214
				>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 9/16 B	76223
5/8"	.650	16.5mm	75640	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 19/32 A	76215
				>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 19/32 B	76224

OBLONG PUNCH				MATERIAL		DIE	
Nominal	Size		Part No.	Thickness	Style	Size	Part No.
	Actual	Metric					
1/4"	.256	6.5mm	76225	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 1/4 x 3/8 A	76229
x	x	x		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 1/4 x 3/8 B	76236
3/8"	.394	10mm	75638	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 1/4 x 1/2 A	76230
1/4"	.256	6.5mm		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 1/4 x 1/2 B	76237
x	x	x	75639	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 11/32 x 1/2 A	76231
1/2"	.512	13mm		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 11/32 x 1/2 B	76238
11/32"	.335	8.5mm	76226	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 11/32 x 43/64 A	76232
x	x	x		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 11/32 x 43/64 B	76239
43/64"	.669	17mm	76227	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 23/64 x 17/32 A	76233
23/64"	.354	9mm		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 23/64 x 17/32 B	76240
17/32"	.531	13.5mm	76228	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 3/8 x 19/32 A	76234
3/8"	.394	10mm		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 3/8 x 19/32 B	76241
x	x	x	75640	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 7/16 x 5/8 A	76235
19/32"	.591	15mm		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 7/16 x 5/8 B	76242
7/16"	.433	11mm	75640	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 7/16 x 5/8 A	76235
x	x	x		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 7/16 x 5/8 B	76242
5/8"	.650	16.5mm	75640	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A	Die 7/16 x 5/8 A	76235
x	x	x		>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	F, A	Die 7/16 x 5/8 B	76242

# TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
<b>Punch piston will not come out</b>	Oil is insufficient.	Refill Oil. (See pg. 9)
	Punch piston has not returned completely due to rebar chips, iron powder and dirt present in the sliding portion of the Punch piston and C frame.	Push back Punch piston. Clean Punch piston.
	Punch piston has not returned completely due the distortion or swelling of Punch piston.	Punch piston needs to be replaced, Contact Hougen Manufacturing, Inc.
	Punch piston has not returned completely due to weak return spring.	Replace return spring.
<b>Punch piston comes out, but cutting power is too weak to punch holes</b>	Oil is insufficient	Refill Oil (See pg. 9)
	Contact between cylinder and release valve is improper.	There are scratches at chimney of cylinder or iron powder or dirt is accumulating there. Polish chimney and replace release valve if it is damaged.
	Breakage of release valve.	Replace Release valve.
	Improper clearance between cylinder and piston.	Replace piston adjusting the clearance.
	Improper contact between cylinder & check valve.	Replace check valve.
	Breakage of urethane packing of cylinder.	Replace urethane packings.
<b>Oil leaks</b>	Scratches on or breakage of oil leveler sack.	Replace oil leveler sack.
	Scratches at sliding portion of C frame and Punch piston and at back-up ring.	Replace back-up ring and o-ring.
	Breakage of o-ring at joint of C frame & cylinder.	Replace o-ring.
	Breakage of liner at joint of cylinder & pump case.	Replace liner.
	Insufficient tightening of bolts at respective parts.	Tighten bolts.
<b>Motor does not move. Poor motor rotation</b>	Insufficient charge of battery.	Charge battery.
	Battery life cycle worn off.	Replace battery.
	Breakage of DC motor by over-heat.	Replace DC motor.
	Deformation or breakage of bearings & gear connected to DC motor.	Replace bearings or gear.

**NOTE:** The internal components of the pump have very close clearances and are sensitive to damage from dust, dirt, contamination of the hydraulic fluid or improper handling. The disassembly of the pump housing requires special tools and training. The improper servicing of electrical components can lead to conditions that could cause injury. The pump and piston components and all electrical components should only be serviced by Hougen Manufacturing, Inc.

***Any attempt by unauthorized personnel to service the internal components of the pump area will void the warranty.***





## Commercial / Industrial Limited Warranty

Hougen Manufacturing, Incorporated warrants its Portable Magnetic Drills, Electro-hydraulic Hole Punchers for a period of (1) one year and other products for ninety (90) days from date of purchase against defects due to faulty material or workmanship and will repair or replace (at its option) without charge any items returned. This warranty is void if the item has been damaged by accident or unreasonable use, neglect, improper service, or other causes not arising out of defects in material or workmanship. No other expressed warranty is given or authorized. Hougen Manufacturing, Inc. disclaims any implied warranty of MERCHANTABILITY or FITNESS for any period beyond the expressed warranty and shall not be liable for incidental or consequential damages. Some states do not allow exclusions of incidental or consequential damages or limitation on how long an implied warranty lasts and, if the law of such a state governs your purchase, the above exclusion and limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To obtain warranty service, return the item(s), transportation prepaid, to Hougen Manufacturing, Inc., 3001 Hougen Drive, Swartz Creek, Michigan 48473.

Hougen Drills (Rotabroach Cutters) are warranted against manufacturing defects only. Subject to Hougen Manufacturing inspection.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

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## Factory Warranty Repair Services

can be obtained by sending your product to:

Hougen Manufacturing, Inc.  
3001 Hougen Drive  
Swartz Creek, MI 48473  
Attn: Repair Department

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