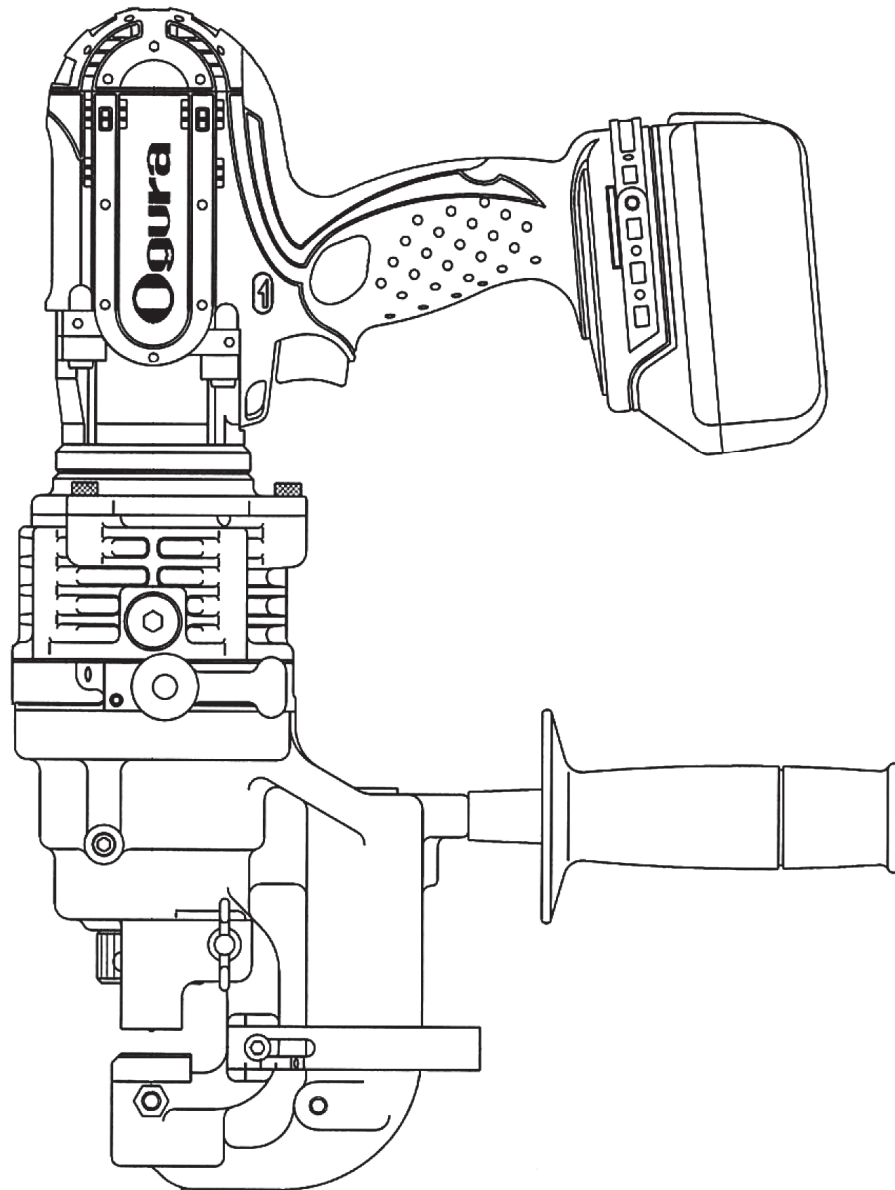


Hougen[®]-Ogura[™]

MODEL 76000PR PUNCH PRO[™] 18V CORDLESS ELECTRO-HYDRAULIC HOLE PUNCHER

OPERATOR'S MANUAL

COVERS HOLE PUNCHER PART NUMBERS 0760102 & 0760202



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

HOUGEN®- OGURA™

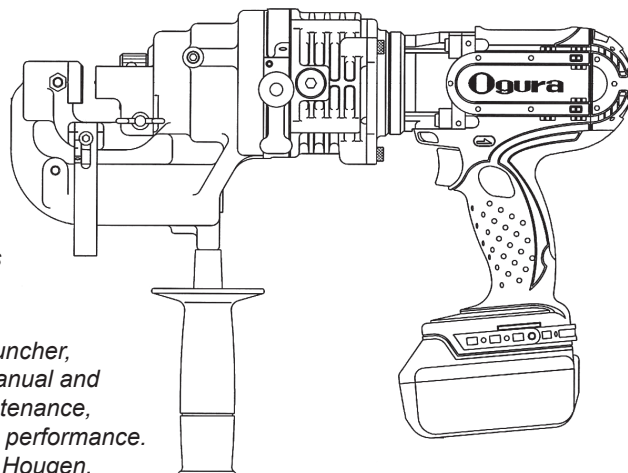
Electro-Hydraulic Hole Puncher

Model 76000PR

Welcome to Hougén

Congratulations on your purchase of the Hougén-Ogura 18V Cordless Electro-Hydraulic Hole Puncher. Your model is designed to produce superior holes quickly and efficiently. Through constant innovation and development, Hougén 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 Hougén.



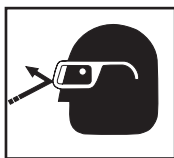
Specifications

Motor	DC Magnet Motor
Battery	Lithium-ion 18V D.C.
Max Throat Depth.....	.98" (25mm)
Shape of Holes	Round / Oblong
Max Hole Size & Thickness Size	19/32" Dia. 1/4" Thick for mild steel of 65,000 psi tensil strength
Punching Speed	4 seconds
Dimensions.....	15.37" L x 4.53" W x 11.51" H (390.5mm L x 115mm W x 292.5mm H)
Weight	17.42 lbs (7.9 kg) including battery

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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 lit.**
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.**
Always check 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 machine in accordance with the relevant safety regulations. Repairs to electric machines 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.

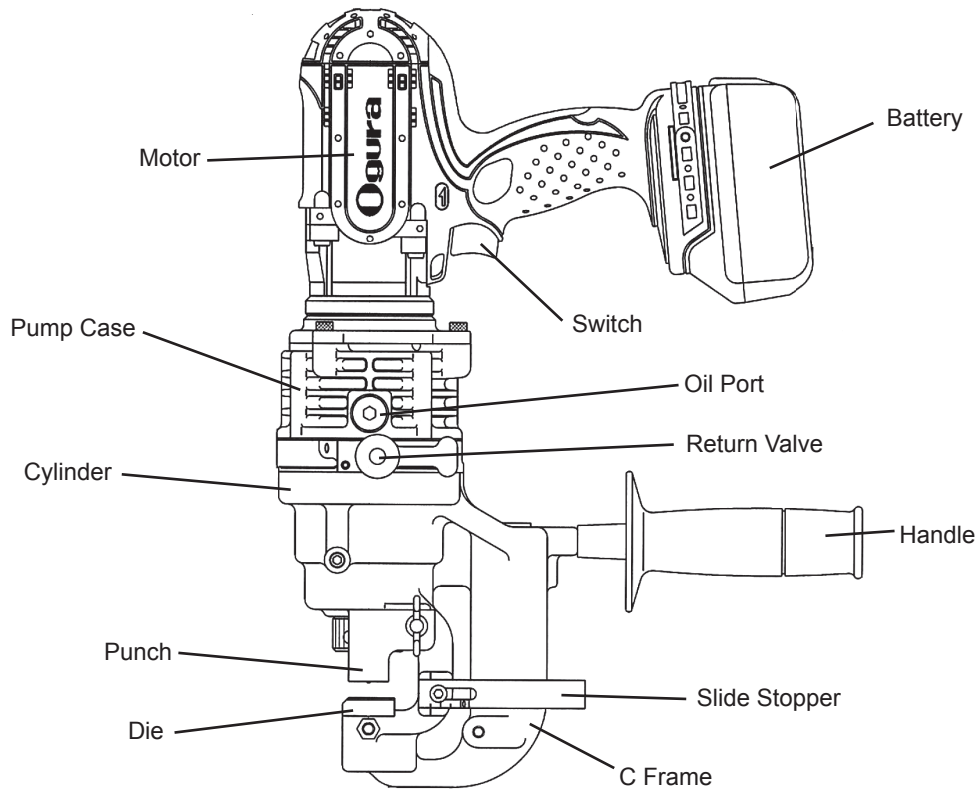


CAUTION

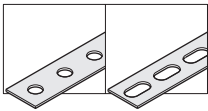
1. Do not cover or clog the motor air vents as this may cause the motor to overheat, resulting in smoke, fire and explosion.
2. This tool is a hydraulic tool powered by electricity. When the temperature is low, hydraulic oil may become solid and tool cannot perform well. Idle tool for a few minutes before 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 only extension cords intended for use outdoors and so marked.

LENGTH OF CORD IN FEET							
115V (Amps)	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

76000PR CORDLESS HOLE PUNCHER

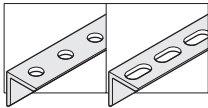


FLAT BAR



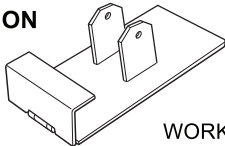
MAX
2" wide X .23 thick
(CENTER PUNCHING)

ANGLE STEEL

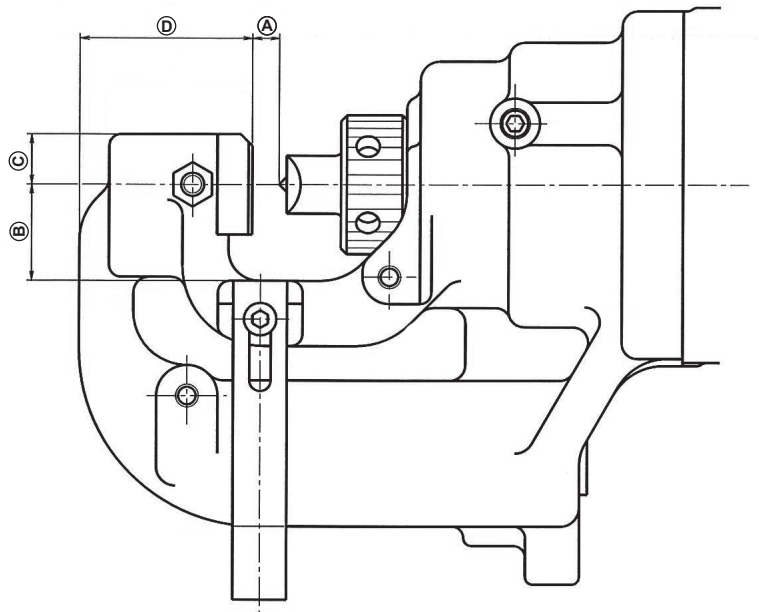


MIN
1" X 1" X .11 thick
MAX
2" X 2" X .23 thick

OPTION



WORK STAND



A = 0.276" C = 0.51"
B = 0.984" D = 1.77"

REMOVING AND INSTALLING PUNCHES

Prior to removing a punch, jog the punch piston down until it puts pressure on a piece of material that is of the appropriate thickness. With a pin spanner, loosen the retaining nut. Manually release the punch piston with the manual release valve, disconnect the unit from the power supply and then remove the retaining nut and punch. Prior to installing a different punch, check for debris in the retaining nut and punch piston. Clean if necessary. Prior to installing a punch, verify the "O" ring on the punch piston is clean and not damaged.

Place your punch into the retaining nut, properly align the punch within the punch piston and hand tighten the retaining nut. Plug in power, jog the punch piston down until it makes contact with your work surface. Tighten the retaining nut with the pin spanner. Manually release the punch piston. Your now ready to punch your material. Failure to align your punch properly could result in serious damage to your machine. It is not necessary to remove your die to install the punch piston.

SELECTING PROPER DIES

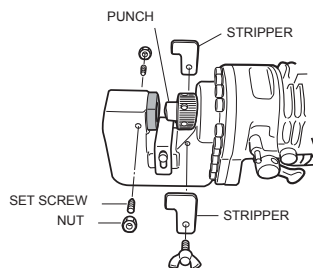
Proper die selection is essential. Other than the obvious necessity of matching shaped punches and dies, there are two other basic selection factors that must be considered. The first is die clearance. Different material types and different material thicknesses require different clearances between the punch and die. In order to maintain the best possible hole while remaining within the tonnage capacity of the machine, it is essential to choose the die with the proper clearance. The second is the die angle. Most structural shapes can be punched with the standard

flat dies, but "I" -beams and most channels which have a 2-in-12 taper require the use of special 9-1/2 degree angled dies. Car and ship channel flanges and other structural shapes with a 2 degree taper can be punched with flat dies. Materials with a flange taper of less than 5 degrees can also be punched with the flat die, however, the hole will be slightly angled. Refer to specific information and tables within this manual for the proper punch and die combination.

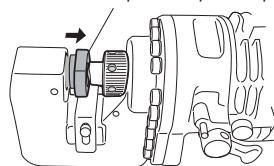
IMPORTANT NOTES:

REMOVING THE NEW DIE

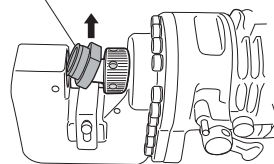
1. To make it easier, please remove the strippers
2. Unscrew the nuts and set screws that hold the die in place



3. Pull the die up to the tip of the punch



4. Remove the die from the "C"- frame, inclining it to remove.



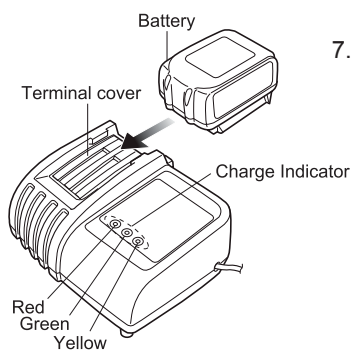
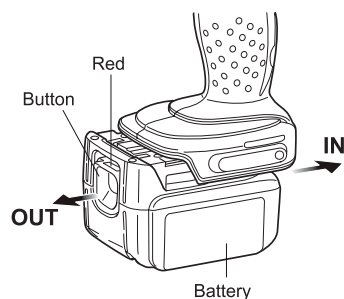
Your Hougen-Ogura punch unit has been equipped with a new die configuration. Please review this information prior to operating your machine

Hougen-Ogura Punches are designed to be used in Structural Steel. If used in harder or higher tensile strength materials, performance will be impeded and serious damaged could occur to your unit.

INSTALLING A PUNCH

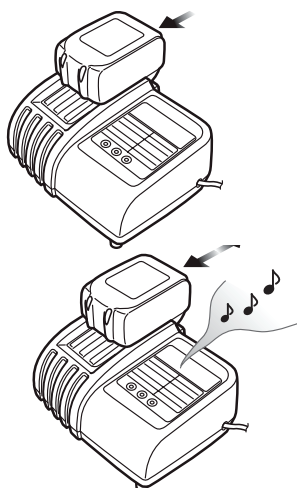
1. To make the operation easier, first remove the strippers on both sides.
2. Reference your Operators manual and remove your punch and the die.
3. Install a new punch and punch retaining nut.
4. Install the die (Reference the steps above and work in reverse)
5. Tighten the punch retaining nut according to the Instructions in your Operators manual.

BATTERY CHARGER



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 Hougén-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

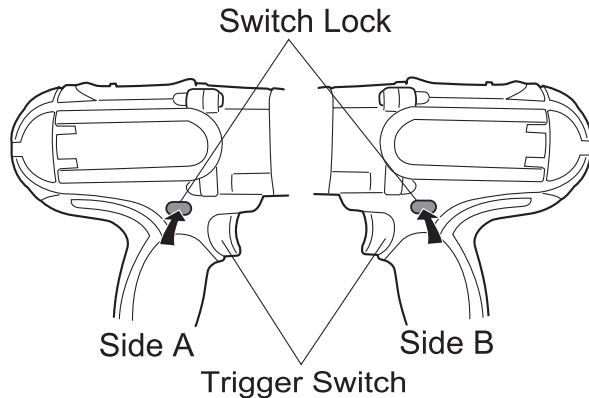
- This charger is equipped with a built-in cooling fan for faster charging without damaging the battery.
- A yellow warning light will flash in the following cases: Trouble with fan and incomplete cool down of battery, or vents are clogged with dust.
- The battery can be charged in spite of the yellow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



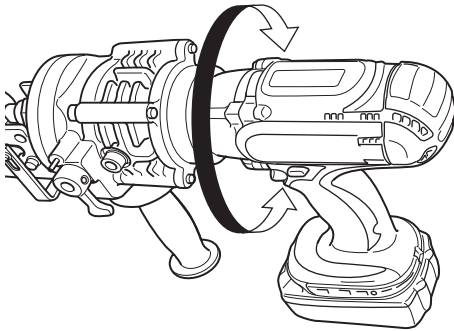
How to use the Switch Lock

- 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

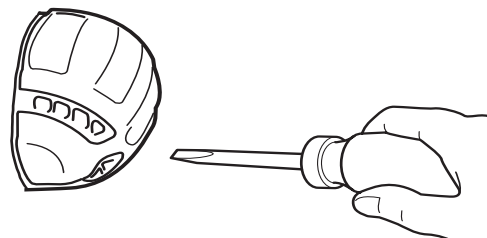
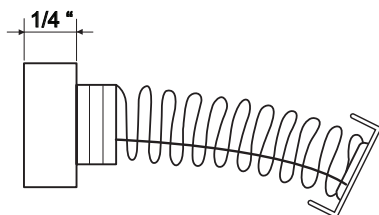


The motor body can be rotated 360 degrees, in either direction, during operation. This feature is particularly useful when working in awkward or narrow areas, as it allows the operator to position the tool for easy operation.

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

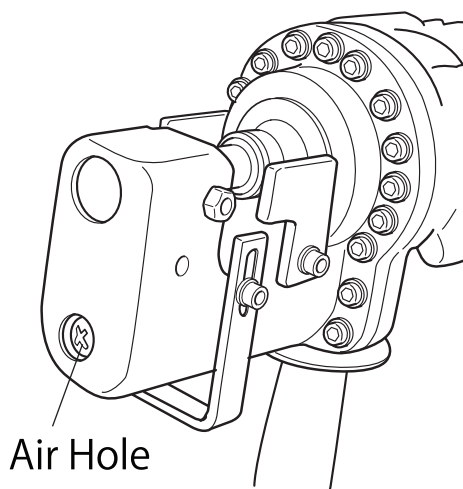
1. Remove the carbon brush cap on the motor frame using a standard screwdriver.
2. Replace the carbon brushes with new ones.
3. Put caps back on.



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. Rock 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.

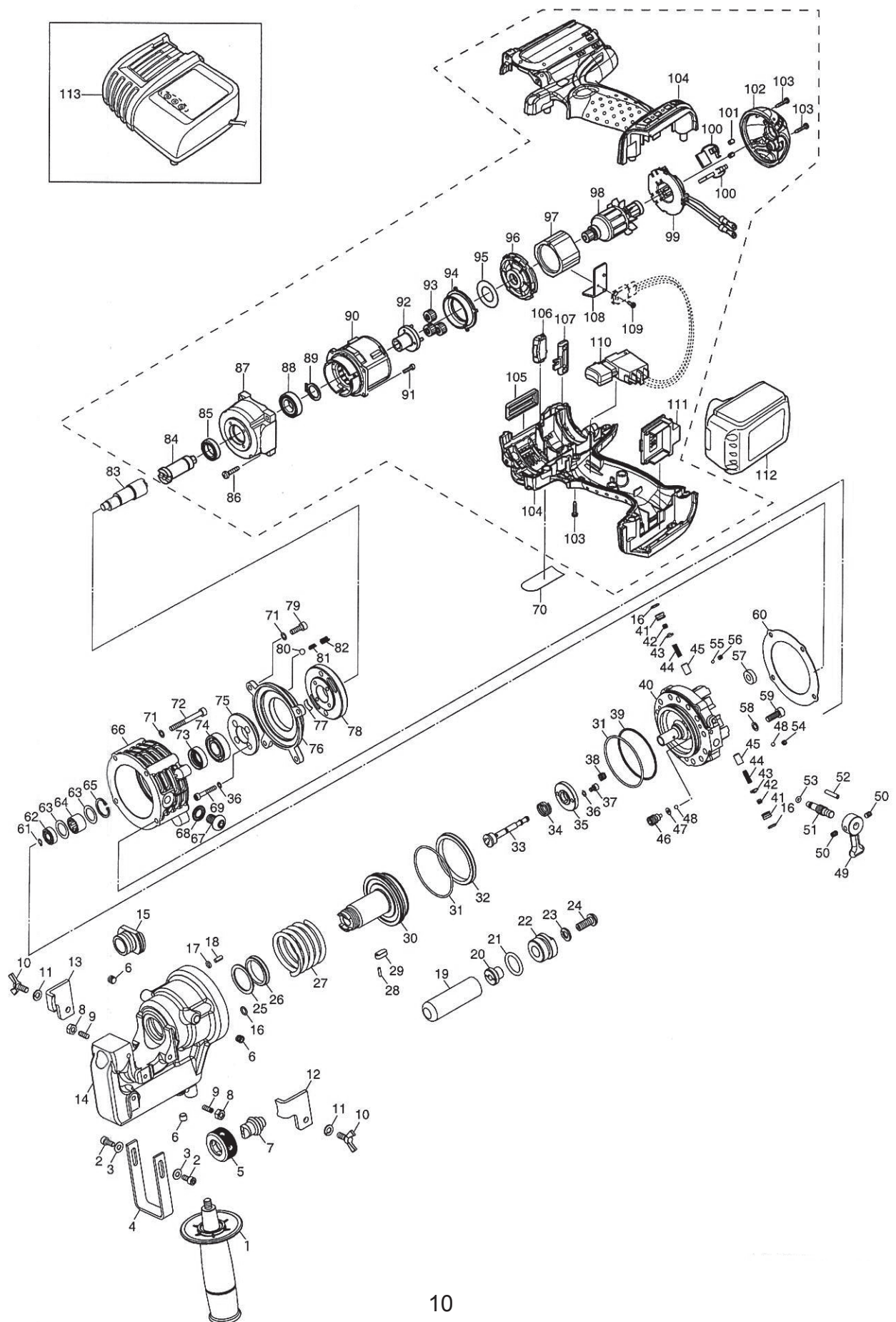


CAUTION

- 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.

76000PR PARTS BREAKDOWN



76000PR PARTS LIST

Item	Part #	Description	Qty	Item	Part #	Description	Qty
1	76600	Handle	1	41	75325	Packing	2
2	75361	Bolt HB5 x 12	2	42	75052	Spring - Check Valve	2
3	75835	Washer WM 5	2	43	76066	Check Valve	2
4	76601	Slide Stopper	1	44	76067	Piston Return Spring	2
5	76602	Punch Retaining Nut	1	45	76622	Piston	1
6	76405	Bolt GDL 1/16	3	46	76623	Seat Bolt	1
7		Punch		47	76624	Washer WM3	1
8	75091	Nut - Hex M6	2	48	75208	Steel Ball D4	6
9	75189	Bolt HS6 x 15	2	49	75047	Return Lever	1
10	75156	Bolt 6 x 15	2	50	75160	SCR-SOC Set M6 x 8	2
11	76078	Washer SW6	2	51	75046	Return Valve	1
12	76603	Stripper R	1	52	75209	Spring Pin	1
13	76604	Stripper L	1	53	75805	O-Ring	1
14	76605	C-Frame	1	54	75207	Bolt 5 x 5	5
15		Die		55	76423	Steel Ball D3	2
16	76606	O-Ring	3	56	76424	Bolt 4 x 4	2
17	76607	O-Ring	2	57	76625	Magnet	2
18	76608	Spacer 3 x 10	2	58	75872	Washer HW6	14
19	76609	Oil Leveler Sack	1	59	76626	Bolt 6 x 16	14
20	76090	Bushing	1	60	76627	Liner	1
21	76610	O-Ring	1	61	75256	Stop Ring	1
22	76611	Bushing Screw	1	62	76467	Bearing - Ball	1
23	75155	Washer SW8	1	63	76107	Needle Holder	2
24	76472	Retaining Screw	1	64	76106	Bearing - Needle	1
25	76612	Back Up Ring	1	65	76108	Stop Ring	1
26	75153	Packing - Rod Seal	1	66	76628	Pump Case	1
27	76613	Punch Return Spring	1	67	76629	Bolt HB10 x 15	1
28	75099	Pin - Roll	1	68	75090	Seal Washer	1
29	76614	Punch Rod Key	1	69	76630	Bolt HB4 x 25	4
30	76615	Punch Rod	1	70	76631	Name Label (120V)	1
31	76616	O-Ring	2		76632	Name Label (230V)	
32	76617	Rod Packing	1	71	75835	Washer Flat 5mm	8
33	76416	Spool Release Valve	1	72	76633	Bolt HB5 x 45	4
34	76618	Valve Return Spring	1	73	75259	Oil Seal	1
35	76619	Stopper Plate	1	74	75327	Bearing	1
36	76070	Washer HW4	6	75	76634	Thrust Fixing Flange	1
37	75205	Bolt HB 4 x 6	2	76	76635	Motor Flange	1
38	76417	Release Valve Spring	1	77	75117	Leaf Spring	2
39	76620	Back Up Ring	1	78	76636	Motor Mounting Flange	1
40	76621	Cylinder with Piston & Spool Release Valve	1 Set	79	75361	SCR-SHC M5 x 15	4
				80	76637	Steel Ball D6	2

76000PR PARTS LIST

Item	Part #	Description	Qty	Item	Part #	Description	Qty
81	76638	Position Spring B	2	98	76033	Armature with Bearing	1
82	76639	Position Spring A	2	99	76205	Brush Holder Assembly	1
83	76409	Eccentric Shaft	1	100	76024	Carbon Brush (Pair)	1
84	76407	Spindle	1	101	76023	Pin 4	2
85	76046	Bearing	1	102	76022	Rear Cover	1
86	76045	Tapping Screw	4	103	76021	Tapping Screw	10
87	76044	Gear Case	1	104	76020	Motor Case Set	1
88	76043	Bearing	1	105	76110	Cover	1
89	76042	Stop Ring	1	106	76207	Lens Case	1
90	76040	Gear Case	1	107	76109	Lock Lever	1
91	76401	Pan Head Scew 3 x 12	4	108	76209	Unit Plate	1
92	75039	Carrier	1	109	76030	Pan Head Screw 3 x 8	1
93	76038	Supper Gear	3	110	76301	Trigger Switch Assembly	1
94	76036	Inter Gear 46	1	111	76032	Terminal	1
95	76037	Flat Washer 18	1	112	76094	Battery BL1830	1
96	76035	Motor Bracket	1	113	76093	Charger DC18RC (110-120V)	1
97	76034	York Unit	1		76473	Charger DC18RC (220-240V)	

Standard Accessories with the 76000PR Cordless Hole Punch

Part #	Description	Qty	Part #	Description	Qty
76640	Tommy Bar	1	75376	Hydraulic Oil #46	1
75742	Hex Wrench M3	1	76098	Battery Cover	1
75743	Hex Wrench M5	1	76566	7/16" Punch	1
76556	Hex Wrench M6	1	76585	7/16" SB Die	1
75771	Spanner	1			

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

Optional Accessories for the 76000PR Cordless Hole Punch

76641	Work Stand	1	75156	Bolt HB6 x 15	2
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76000PR ROUND PUNCHES & DIES

ROUND PUNCH				MATERIAL	DIE	
Nominal	Size		Part No.	Thickness	Size	Part No.
	Actual	Metric				
5/32"	.157	4mm	76558	5/16 (.078) 14 GA.	Die 5/32 SA	76571
3/16"	.197	5mm	76559	5/64 (.078) to .118 14 to 12 GA.	Die 3/16 SA	76572
7/32"	.217	5.5mm	76560	5/64 (.078) to .118 14 to 12 GA.	Die 7/32 SA	76573
15/64"	.236	6mm	76561	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 15/64 SA	76574
				5/64 (.125) to 5/32 (.157) 10 to 9 GA.	Die 15/64 SB	76575
1/4"	.256	6.5mm	76562	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 1/4 SA	76576
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 1/4 SB	76577
5/16"	.315	8mm	76563	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 5/16 SA	76578
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 5/16 SB	76579
11/32"	.335	8.5mm	76564	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 11/32 SA	76580
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 11/32 SB	76581
3/8"	.394	10mm	76565	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 3/8 SA	76582
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 3/8 SB	76583
7/16"	.433	11mm	76566	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 7/16 SA	76584
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 7/16 SB	76585
15/32"	.472	12mm	76567	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 15/32 SA	76586
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 15/32 SB	76587
1/2"	.512	13mm	76568	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 1/2 SA	76588
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 1/2 SB	76589
9/16"	.551	14mm	76569	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 9/16 SA	76590
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 9/16 SB	76591
19/32"	.591	15mm	76570	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	Die 19/32 SA	76592
				>5/64 (.125) to 1/4 (.250) 10 to 3 GA.	Die 19/32 SB	76593

76000PR OBLONG PUNCHES & DIES

OBLONG PUNCH			Part No.	MATERIAL	DIE	
Nominal	Size Actual	Metric		Thickness	Size	Part No.
1/4" x 3/8"	.256 x .394	6.5mm x 10mm	76594	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	Die 1/4 x 3/8	76236
1/4" x 1/2"	.256 x .512	6.5mm x 13mm	76595	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	Die 1/4 x 1/2	76237
11/32" x 1/2"	.335 x .512	8.5mm x 13mm	76596	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	Die 11/32 x 1/2	76238
23/64" x 17/32"	.354 x .531	9mm x 13.5mm	76597	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	Die 23/64 x 17/32	76240
3/8" x 19/32"	.394 x .591	10mm x 15mm	76598	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	Die 3/8 x 19/32	76241
7/16" x 5/8"	.433 x .625	11mm x 15.9mm	76599	>1/8 (.125) to 1/4 (.250) 10 to 3 GA.	Die 7/16 x 5/8	76242

TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
Punch piston will not come out	Oil is insufficient.	Refill Oil. (See pg. 9)
	Punch piston has not returned completely due to 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 to 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.
Punch piston comes out, but power is too weak to punch holes	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.
Oil leaks	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.
Motor does not move. Poor motor rotation	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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Hougen-Ogura Patent Notice

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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 USA
Attn: Repair Department

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