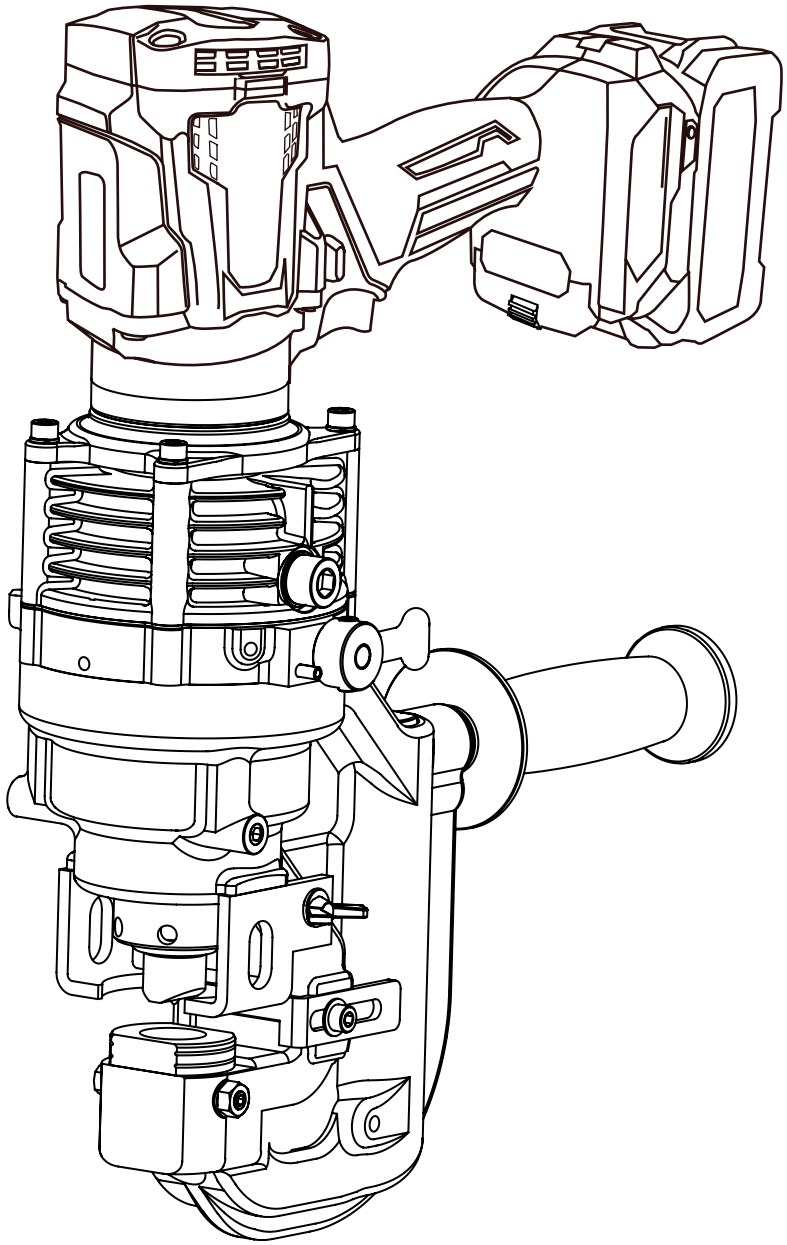
Hougen®-Ogura™

76004PR PUNCH PRO™
40V CORDLESS HOLE PUNCHER

OPERATOR'S MANUAL

COVERS HOLE PUNCHER PART NUMBER 0764102



OM76004PR Printed in U.S.A.

Hougen®-Ogura™

Electro-Hydraulic Hole Punch

Model 76004PR

Congratulations on your purchase of the Hougen®-Ogura™ Electro-Hydraulic Hole Puncher. Your model is designed to produce superior holes quickly and efficiently. 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 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®-Ogura™

Specifications	
Weight	24.9 lbs (11.3 kg)
Dimensions	20-3/4" L x 5" W x 12-1/2" H (529mm L x 127mm W x 315mm H)
Max. Throat Depth	1-9/16" (40mm)
Max. Hole Size	25/32" (20mm) Dia. thru 3/8" (.375mm) mild steel

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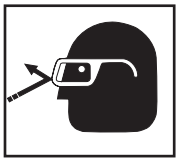
SAFETY FIRST



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

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

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.

76004PR CONTENTS

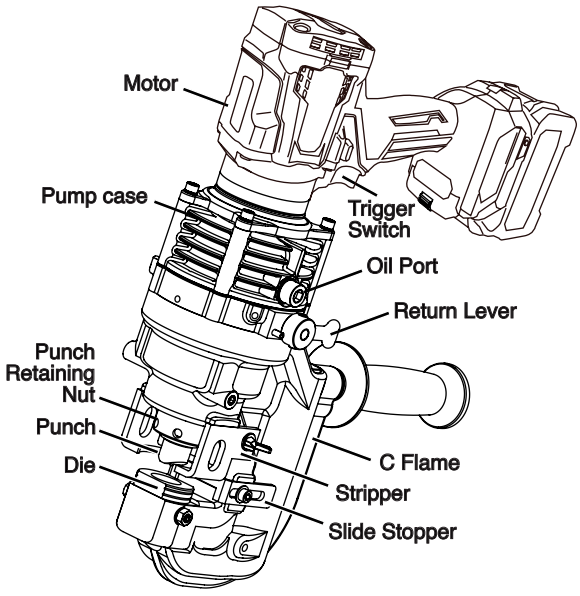
Hydraulic Oil	**75376**
9/16" Diameter Punch	**76341**
9/16" Diameter Die - Type SB - For material 5/64" to 3/8"	**76323**
Spanner	**75771**
10mm Open End Wrench	**75771**
M3 Hex Key	**75742**
M4 Hex Key	**75743**
M5 Hex Key	**75744**
M8 Hex Key	**75746**
Tommy Bar	**75903**
Battery	**09788**
Charger	**09787**

PRINCIPALS OF OPERATION

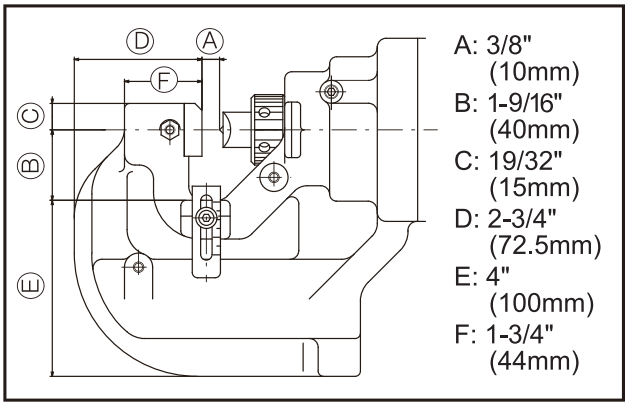
The Hougen-Ogura Electro-hydraulic Hole Puncher is an integrated unit, containing the electric motor, hydraulic pump, and "C"-frame punching unit. It uses hydraulic power to force the punch through the workpiece, and a strong spring to return the punch piston to its "home" position. The patented design includes an automatic valve that releases the hydraulic pressure when the punch piston is at the bottom of its stroke. The automatic valve remains open until the punch piston has fully returned to the home position. As a result of this design, the piston will not return to its home position automatically unless the full stroke has been completed.

Also, the punch will not begin another stroke unless the punch has fully returned to the home position, resetting the automatic valve. **In the event that the punch does stick in the material, keeping the punch piston from returning to the home position, the 76004PR now features a power return. Leaving the manual return valve closed and depressing the trigger, the punch piston will now be powered back to the home position.** To allow the punch piston to be manually returned in the event that the punch cycle is stopped prior to completion, a manual return valve is provided.

■ Name of the parts



■ Punching throat

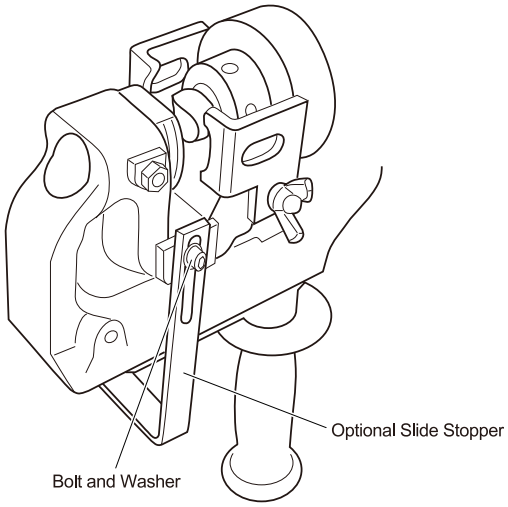


HOLE LOCATOR GAUGE ADJUSTMENT

The Hole locator Gauge can be set to hold the Hole Punches at a constant distance from the edge of the workpiece. The gauge is held in place by one or two socket head caps screws. Before making any adjustment, first, unplug the power cord. To adjust the position of the gauge, loosen the cap screw(s), tap the gauge into the desired position and retighten the cap screw(s).

SLIDE STOPPER

Punching up to 40mm depth, from the edge of material, can be done using the slide stopper.



⚠ CAUTION

Before attaching or removing slide stopper, ensure that the machine is disconnected from its power source to prevent accidental operation and personal injury.

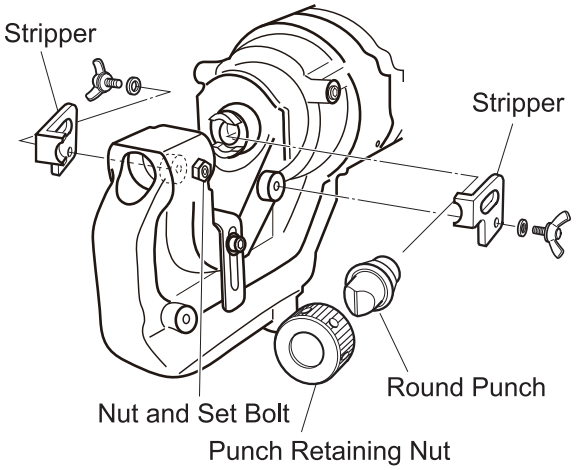
1. Loosen the set bolt and nut to remove the Die.
2. Remove the bolt and washer fixing the slide stopper.
3. Remove the slide stopper by pulling it to the upper side of the C frame.
4. Insert the slide stopper for maximum depth from the bottom side of the C frame.
5. Fix the slide stopper with the bolt and washer removed in procedure #2 above.
6. Install the die with the set bolt and nut removed in procedure #1 above.

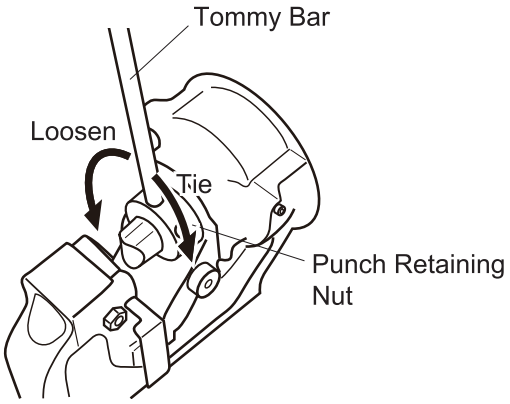
REMOVING AND INSTALLING ROUND PUNCHES

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.

ROUND PUNCHES





⚠ CAUTION

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

1. Be sure that the punch piston is fully retracted and remove the strippers to make access to the parts easier.
2. The punch must be removed first and then the die. Unscrew the punch retaining nut to remove the punch and remove the set bolt and the nut to remove the die.
   Note: When replacing the punch and the die, make sure that the correct size, thickness and hole shape is seleted. Shaped punches and dies must be properly aligned with each other.
3. Place the punch in the punch retaining nut, then insert the punch with the nut into the punch piston and hand tighten the nut.
   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.
4. Make sure the punch is correctly positioned in the punch rod and tighten the punch retaining nut firmly with the Tommy Bar supplied.
5. Place the die in the C-frame in the proper orientation secure firmly with the set bolt and tighten the nut.
6. Replace the strippers.

⚠ CAUTION

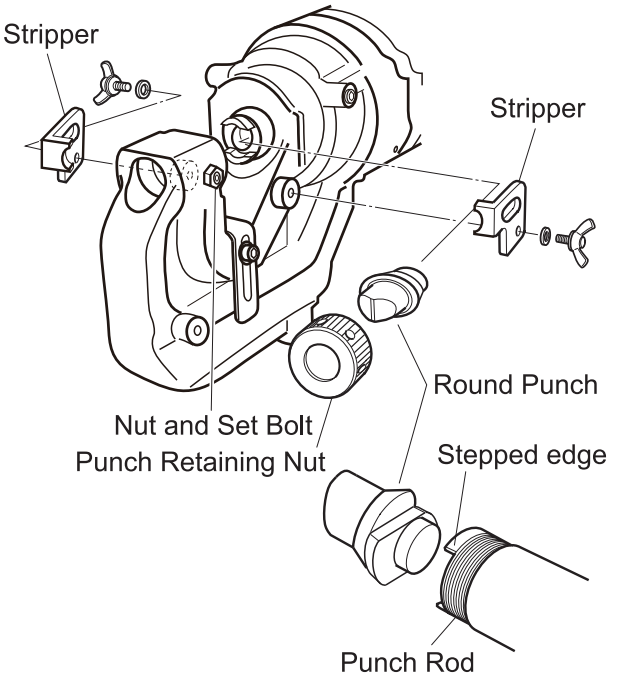
Check the butterfly bolts, holding the stripper, regularly to ensure that they are tight. Loose bolts may cause the stripper to detach and damage the tool.

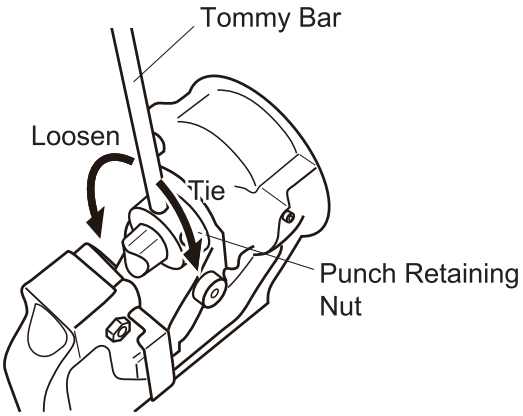
⚠ WARNING

If the punch and die are not the same size of and they are not positioned properly , the punch may strike the die causing both parts to break. In such a case, pieces flying off from the broken parts may cause personal injury.

REMOVING AND INSTALLING OBLONG PUNCHES

OBLONG PUNCHES





⚠ CAUTION

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

1. Be sure that the punch piston is fully retracted and remove the strippers to make access to the parts easier.
2. The punch must be removed first and then the die. Unscrew the punch retaining nut to remove the punch and remove the set bolt and the nut to remove the die.
   Note: When replacing the punch and the die, make sure that the correct size, thickness and hole shape is seleted. Shaped punches and dies must be properly aligned with each other.
3. Place the punch in the punch retaining nut, then insert the punch with the nut into the punch piston and hand tighten the nut.
   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.
4. Make sure the punch is correctly positioned in the punch rod and tighten the punch retaining nut firmly with the Tommy Bar supplied.
5. Place the die in the C-frame in the proper orientation secure firmly with the set bolt and tighten the nut.
6. Replace the strippers.

⚠ CAUTION

Check the butterfly bolts, holding the stripper, regularly to ensure that they are tight. Loose bolts may cause the stripper to detach and damage the tool.

⚠ CAUTION

Make sure the stepped edge of the Oblong Punch is positioned correctly in the Punch Rod and that the Punch Retaining Nut is properly fastenened.

⚠ WARNING

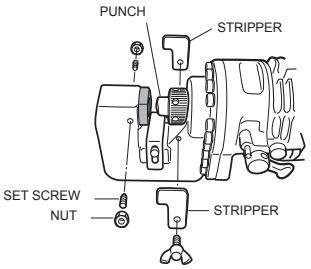
If the punch and die are not the same size of and they are not positioned properly, the punch may strike the die causing both parts to break. In such a case, pieces flying off from the broken parts may cause personal injury.

SELECTING PROPER DIES

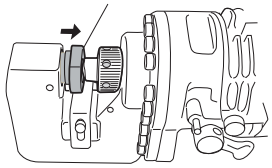
Proper die selection is essential. Other than the obvious necessity of matching shaped punches and dies, there are two other basic selection factors that must be considered. The first is die clearance. Different material types and different material thicknesses require different clearances between the 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.

REMOVING THE NEW DIE

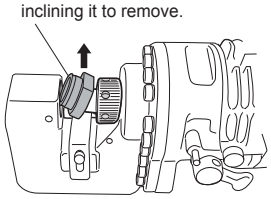
1. To make it easier, please remove the strippers
2. Unscrew the nuts and set screws that hold the die in place



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



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



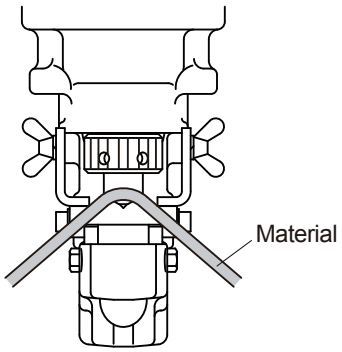
INSTALLING A PUNCH

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.

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.

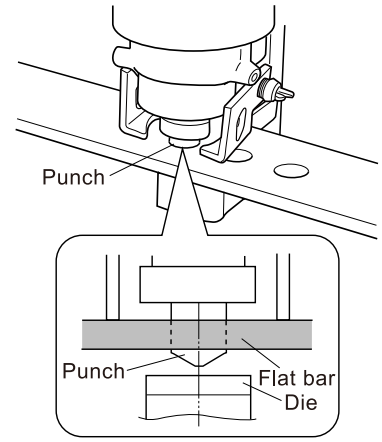
CAUTION WHEN SELECTING THE DIE



It is important that the die selected is correct for the thickness of the material to be punched.
Punching material of thickness 4 mm to 8 mm using a die for thinner material can cause the punch to jam in the material. This is due to the smaller clearance betweenthe die and punch. In such a case the material will be pulled up by the retracting punch as shown in the drawing on the left. Special care should be taken when punching flat bar of mild steel, aluminum and copper.

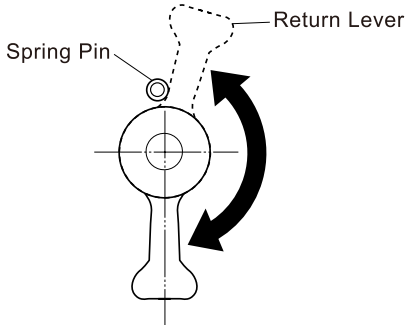
OPERATING PROCEDURES

1. Before make any adjustment, turn off the power supply and unplug the power cord.
2. Check the position for punching and adjust the slide stopper to the required distance. The slide stopper, which is set to hold the hole puncher at a constant distance from the edge of the workpiece, is held in place by one or two socket head cap screws. Loosen the cap screw(s) and tap the slide stopper into the desired position. Retighten the cap screw(s).
3. Plug the power cord into a power outlet, ensuring that the voltage of the tool is the same as the supply.
4. Check that the return lever is fully closed in the clockwise direction.
5. Make sure that the punch piston is fully retracted.
6. Make sure that the proper punch and die are selected and that they are installed correctly.
7. Place the puncher in the require position on the work piece, using the slide stopper as a guide and lining up the point of the punch with the center mark of the hole to be punched.
8. Pull the trigger switch. The punch rod will extend and push the punch through the material. Keep the switch on until the punch has reached the end of its stroke and returns to its starting position. If the punch doesn't return after punching finishes, release the switch to turn the motor off. Pull the switch again to run the motor and to return the punch. (See further explanation below for procedure when punch becomes stuck in the material.)
   To aid accurate and easy positioning of the punch, the switch can be operated on and off to jog the punch down to the work piece. If the position is not satisfactory, open the manual return lever to retract the punch for another attempt. If the punch doesn't return to its starting position with manual return lever open, pull the trigger switch to return the punch.



<u>When the punch fails to come out of the material after the punching:</u>

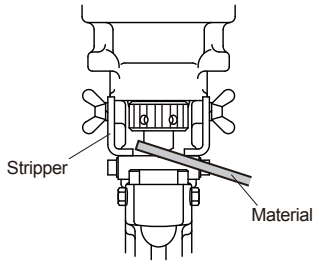
1. Pull the trigger switch to run the motor and to return the punch to its starting position by hydraulic power.
2. Release the switch, when the punch is fully returned to its starting position.
3. Proceed with the next punching operation according to the normal operating procedure.



When the punch fails to come out of the material after the punching or when it is necessary to stop the operation before <u>punching is finished:</u>

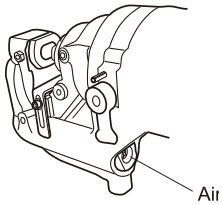
1. Turn the return lever counterclockwise until it hits the spring pin and then immediatley back to its starting to release the internal pressure. Note: If at this stage the punch retracts from the material under its own power, allow the punch to completely return and then turn the return lever back to its position. In this case it is not necessary to complete the stages 2 and 3.
2. Pull the trigger switch to run the motor and to return the punch to its starting position by hydraulic power.
3. Release the switch when the punch is fully returned to its starting position.
4. Proceed with the next punching operation according to the normal operating procedure.

CAUTION WHEN USING THE STRIPPER



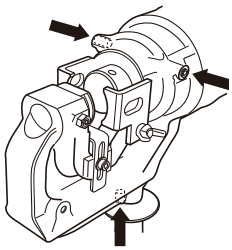
Do not position the material with one end or both ends unsupported by the stripper. If the material is not properly supported, it will move when the punch tries to return causing the punch to jam and damage the tool.

MAINTENANCE



⚠ CAUTION

Keep the air hole at the end of the C frame clear of dirt and obstructions. The air hole has to be open in order to control the hydraulic pressure.



⚠ CAUTION

Do not undo or remove the three screws in the drawing on the left. Doing so will cause oil to leak from the tool.

ADDING OIL

Use of the correct hydraulic oil is essential. Approved oils are Shell "TELLUS Oil" and Exxon "TERESSTIC" (Part No. 75376). Grade #46 viscosity must be used. Check the unit specifications. 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 piston 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.

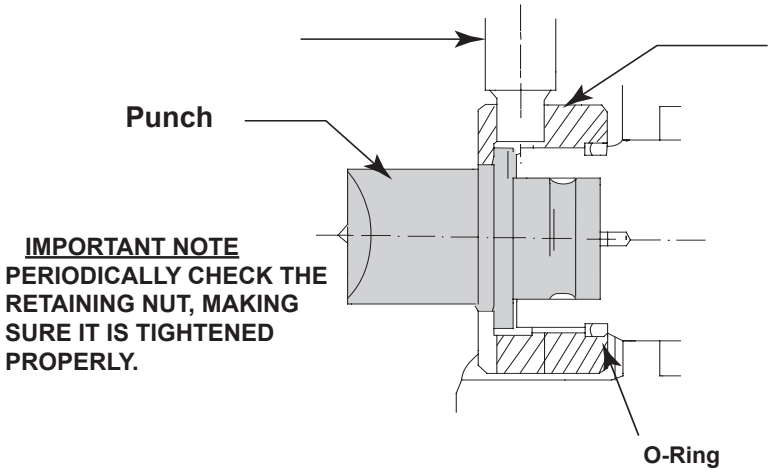
5. Using the small squeeze bottle supplied with the Hole Puncher, carefully add hydraulic oil to completely fill the reservoir. Rock the Hole Puncher back and forth slightly several times to free any trapped air bubbles, then add additional oil if necessary.

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 the 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.

PUNCH AND RETAINING NUT



IMPORTANT NOTE
PERIODICALLY CHECK THE RETAINING NUT, MAKING SURE IT IS TIGHTENED PROPERLY.

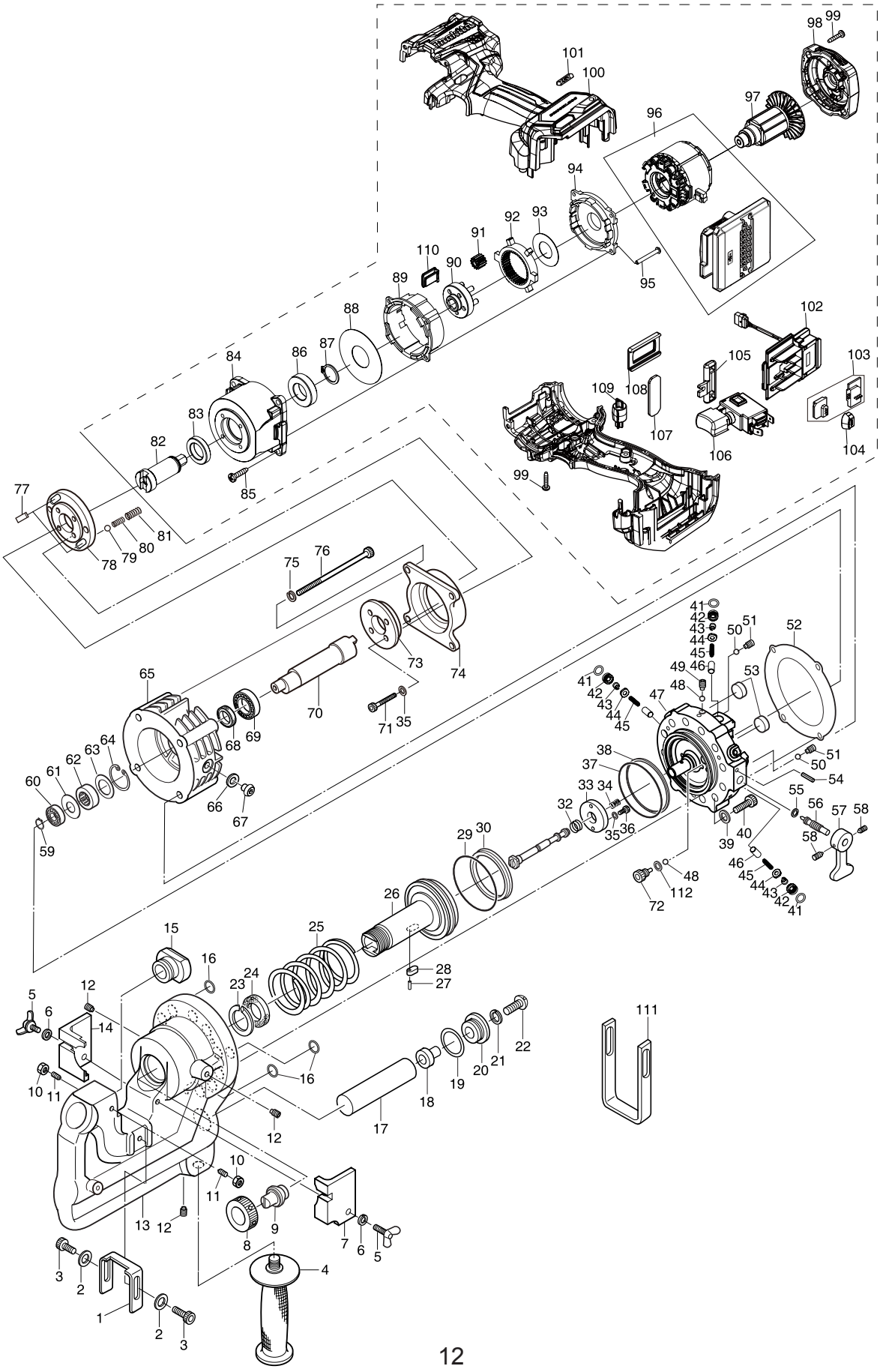
HELPFUL HINTS FOR HOLE PUNCHING

Each of the punches is provided with a sharp point at its center. If the hole locations are center punched, the point on the end of the punch may be used to "find" the center punched spot.

Also, for accurate and easy positioning of the punch to a hole location, the switch can be intermittently pulsed on and off to jog the punch down to the work surface.

If the position is not satisfactory, open the manual return valve to retract the punch for another attempt. This operation can also be performed with the manual return valve "cracked" open slightly to prevent full punching pressure from being developed. In this manner, the punch can be easily brought right down to the surface without beginning to punch the hole. If the location is satisfactory, close the valve and finish the operation.

PARTS BREAKDOWN



MODEL 76004PR PARTS LIST

Det #	Part #	Description	Qty
1	**76460**	Slide Stopper	1
2	**76401**	Washer WM5 ex75157	2
3	**76402**	Bolt HB5 x 12	2
4	**75063**	Grip Handle	1
5	**75175**	Bolt 6 x 15	2
6	**75162**	Washer SW6	2
7	**76461**	Stripper R	1
8	**76404**	Punch Retaining Nut	1
9	**SEE LIST**	Punch	
10	**75091**	Nut NM6	2
11	**75120**	Bolt HS6 x 15	2
12	**76405**	Bolt GDL 1/16	3
13	**76462**	C-frame	1
14	**76463**	Stripper L	1
15	**SEE LIST**	Die	
16	**75909**	O Ring P8	3
17	**75137**	Oil Leveler Sack	1 set
18	**76408**	Bushing	1
19	**76409**	O Ring	1
20	**76410**	Bushing Holder	1
21	**75155**	Washer SW8	1
22	**76472**	Retaining Screw	1
23	**76411**	Back Up Ring	1
24	**76412**	SKY Packing	1
25	**76464**	Punch Return Spring	1
26	**76465**	Punch Rod	1
27	**75099**	Spring Pin	1
28	**75135**	Punch Rod Key	1
29	**76414**	O-Ring	1
30	**76415**	Packing	1
32	**75202**	Valve Return Spring	1
33	**75203**	Stopper Plate	1
34	**76417**	Release Valve Spring	1
35	**75101**	Washer HW4	6
36	**75205**	Bolt HB4 X 6	2
37	**76418**	O-Ring	1
38	**76419**	Back Up Ring	1
39	**75159**	Washer HW8	12
40	**76420**	Bolt HB8 X 22	12
41	**75326**	O-Ring S8	3
42	**75325**	Packing	3
43	**75052**	Check Valve Spring	2
44	**76066**	Check Valve	3
45	**76067**	Piston Return Spring	3
47	**76645**	Cylinder W/ Piston & Spool Valve	1
48	**75208**	Steel Ball D4	6
49	**75207**	Bolt HS5 X 5	5
50	**76423**	Steel Ball D3	3
51	**76424**	Bolt HS4 X 4	3
52	**76425**	Liner B	1
53	**75054**	Magnet	2
54	**75209**	Spring Pin	1
55	**75085**	O-Ring P4	1
56	**75046**	Return Valve	1
57	**75047**	Return Lever	1
58	**75160**	Bolt HS6 X 8	2
59	**75256**	Stop Ring	1
60	**76467**	Ball Bearing	1
61	**76426**	Needle Holder B	1
62	**76428**	Needle Bearing	1
63	**76427**	Needle Holder A	1

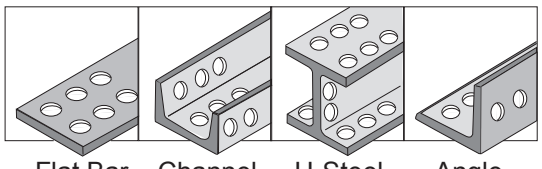
Det #	Part #	Description	Qty
64	**76429**	Stop Ring	1
65	**76430**	Pump Case	1
66	**75090**	Seal Washer	1
67	**76646**	Bolt TRB 10 x 15	1
68	**75259**	Oil Seal	1
69	**75327**	Bail Bearing 6002RU	1
70	**76647**	Eccentric Shaft	1
71	**76630**	Bolt HB4 X 25	4
72	**76623**	Seal Bolt	1
73	**76634**	Thrust Fix Flange	1
74	**76648**	Middle Flange	1
75	**75836**	Washer SW5	4
76	**76433**	Bolt HB5 X 65	4
77	**75117**	Leaf Spring	2
78	**76636**	Motor Mounting Flange	1
79	**76637**	Steel Ball D6	2
80	**75638**	Position Spring B	2
81	**75639**	Position Spring A	2
82	**76650**	Spindle	1
83	**76651**	Ball Bearing 6802LLB	1
84	**76652**	Gear Houging	1
85	**76653**	Tapping Bolt 4 X 18	4
86	**76043**	Ball Bearing 6902LLB	1
87	**76042**	Circlip S-15	1
88	**76654**	Flat Washer 15	1
89	**76655**	Gear Case	1
90	**76656**	Carrier Complete	1
91	**76657**	Spur Gear 13	5
92	**76658**	Internal Gear 41	1
93	**76659**	Flat Washer 13	1
94	**76660**	Motor Bracket	1
95	**76661**	Pan Head Screw M3 x 25	1
96	**76662**	Stator Complete	1
97	**76663**	Rotar	1
98	**76664**	Rear Cover	1
99	**76021**	Tapping Screw PT3X16	11
100	**76665**	Motor Housing Set (Pair)	1
101	**76666**	XGT Log Level	1
102	**76667**	Terminal Unit	1
103	**76668**	Sensor Circuit	1
104	**76669**	LED Circuit	1
105	**76670**	Lock Lever	1
106	**76671**	Switch	1
107	**76672**	Masking Label	1
108	**76673**	Cover A	1
109	**76674**	Cover B	1
110	**76675**	Cover C	1
111	**76458**	Slide Stopper (Option)	1
112	**76518**	Washer WM3	1
113	**75742**	Hex Wrench M3	1
114	**75743**	Hex Wrench M4	1
115	**75865**	Spanner (10mm Open End Wrench)	1
116	**75903**	Tommy Bar	1
117	**76458**	Slide Stopper (Option)	
118	**76456**	Work Stand (Option)	
119	**76455**	Bolt HB6X15 (Option)	
120	**76676**	Name Label 76004PR	1
121	**75864**	Hougen-Ogura Label	1
122	**76677**	Warning Label	1

PUNCHES AND DIES FOR 76004PR

ROUND PUNCH				MATERIAL		DIE	
Size			Part No.	Thickness	Style	Size	Part No.
Nominal	Actual	Metric					
15/64"	.234	6mm	76334	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 15/64 SA	76308
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 15/64 SB	76309
1/4"	.256	6.5mm	76335	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 SA	76310
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 SB	76311
5/16"	.315	8mm	76336	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 5/16 SA	76312
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 5/16 SB	76313
11/32"	.335	8.5mm	76337	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 SA	76314
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 SB	76315
3/8"	.394	10mm	76338	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/8 SA	76316
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 3/8 SB	76317
				5/16" (.312) max.	C	Die 3/8 C	75450
7/16"	.433	11mm	76339	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 7/16 SA	76318
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 7/16 SB	76319
				5/16" (.312) max.	C	Die 7/16 C	75451
15/32"	.472	12mm	75910	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 15/32 SA	75912
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 15/32 SB	75913
1/2"	.512	13mm	76340	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/2 SA	76320
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 1/2 SB	76321
				5/16" (.312) max.	C	Die 1/2 C	75452
9/16"	.551	14mm	76341	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 9/16 SA	76322
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 9/16 SB	76323
				5/16" (.312) max.	C	Die 9/16 C	75453
19/32"	.591	15mm	76342	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 19/32 SA	76324
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 19/32 SB	76325
5/8"	.625	15.9mm	76343	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 5/8 SA	76326
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 5/8 SB	76327
				5/16" (.312) max.	C	Die 5/8 C	75959
11/16"	.688	17.5mm	76344	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/16 SA	76328
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 11/16 SB	76329
				5/16" (.312) max.	C	Die 11/16 C	75960
23/32"	.709	18mm	75911	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 23/32 SA	75915
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 23/32 SB	75916
3/4"	.750	19mm	76345	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/4 SA	76330
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 3/4 SB	76331
				5/16" (.312) max.	C	Die 3/4 C	75961
25/32"	.787	20mm	76346	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 25/32 SA	76332
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 25/32 SB	76333
				5/16" (.312) max.	C	Die 25/32 C	75962

OBLONG PUNCH				MATERIAL		DIE	
Size			Part No.	Thickness	Style	Size	Part No.
Nominal	Actual	Metric					
1/4" x 3/8"	.256 x .394	6.5mm x 10mm	76347	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 x 3/8 A	76300
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 x 3/8 B	76301
1/4" x 1/2"	.256 x .512	6.5mm x 13mm	76348	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/4 x 1/2 A	75643
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 1/4 x 1/2 B	75644
11/32" x 1/2"	.335 x .512	8.5mm x 13mm	76349	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 x 1/2 A	75645
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 x 1/2 B	75646
11/32" x 43/64"	.335 x .669	8.5mm x 17mm	76350	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 11/32 x 43/64 A	76302
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 11/32 x 43/64 B	76303
23/64" x 17/32"	.354 x .531	9mm x 13.5mm	76351	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 23/64 x 17/32 A	76304
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 23/64 x 17/32 B	76305
3/8" x 19/32"	.394 x .591	10mm x 15mm	76352	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 3/8 x 19/32 A	76306
				5/64 (.078) to 1/4 (.250) 14 to 3 GA.	F, A, H	Die 3/8 x 19/32B	76307
7/16" x 5/8"	.433 x .625	11mm x 15.9mm	76353	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 7/16 x 5/8 A	75647
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 7/16 x 5/8 B	75648
				5/16" (.312) max.	C	Die 7/16 x 5/8 C	75655
1/2" x 3/4"	.512 x .750	13mm x 19mm	76354	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 1/2 x 3/4 A	75649
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 1/2 x 3/4 B	75650
				5/16" (.312) max.	C	Die 1/2 x 3/4 C	75963
9/16" x 13/16"	.551 x .827	14mm x 21mm	76355	5/64 (.078) to 1/8 (.125) 14 to 11 GA.	F, A, H	Die 9/16 x 13/16 A	75651
				5/64 (.078) to 3/8 (.375) 14 to 3 GA.	F, A, H	Die 9/16 x 13/16 B	75652
				5/16" (.312) max.	C	Die 9/16 x 13/16 C	75964

- Punching capacity data is based on mild steel of 65,000 psi tensile strength



TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
MOTOR RUNS BUT PUNCH PISTON DOES NOT COME OUT	MANUAL RETURN VALVE IS OPEN	CLOSE MANUAL RETURN VALVE
	OIL IS INSUFFICIENT	ADD OIL
	PISTON HAS NOT RETURNED COMPLETELY TO ITS HOME POSITION DUE TO STEEL CHIPS, DIRT OR OTHER DEBRIS ON THE EXPOSED PUNCH-HOLDER POSITION.	CLEAN DEBRIS FROM EXPOSED PUNCH-HOLDER PORTION OF PISTON ROD. PUSH PUNCH PISTON BACK TO ITS HOME POSITION.
	PUNCH PISTON RETURN SPRING IS TOO WEAK TO RETURN PUNCH ROD	HAVE MACHINE SERVICED BY THE FACTORY
PUNCH PISTON COMES OUT, BUT PUNCHING POWER IS TOO WEAK TO PUNCH	MANUAL RETURN VALVE IS NOT COMPLETELY CLOSED	CLOSE MANUAL RETURN VALVE
	OIL IS INSUFFICIENT OR AIR IS TRAPPED IN RESERVOIR	ADD OIL
	INTERNAL PUMP OR PISTON PARTS ARE WORN, DIRTY OR DAMAGED AND NOT FUNCTIONING PROPERLY	HAVE MACHINE SERVICED BY THE FACTORY
MOTOR DOES NOT ROTATE OR POOR ROTATION OF MOTOR	OPEN POWER CIRCUIT	CHECK PLUG, EXTENSION CORD, CIRCUIT BREAKER
	IMPROPER VOLTAGE	CHECK POWER SOURCE
	EXCESSIVE VOLTAGE DROP	EXTENSION CORDS ARE OF INSUFFICIENT WIRE SIZE FOR THE LENGTH OF THE CORD.
	WORN OR DAMAGED CORDS OR PLUGS. WORN CARBON BRUSHES. DAMAGED INTERNAL MOTOR PARTS	HAVE MACHINE SERVICED BY THE FACTORY
OIL LEAKING BETWEEN "C" FRAME AND CYLINDER OR BETWEEN CYLINDER AND PUMP HOUSING	BOLTS ARE NOT TIGHT	TIGHTEN BOLTS
	GASKET IS DAMAGED	HAVE MACHINE SERVICED BY THE FACTORY
OIL LEAKING AROUND PISTON OR FROM INTERNAL AREA	INTERNAL SEALS OR SURFACES ARE DAMAGED. OIL LEVELER SACK IS BROKEN	HAVE MACHINE SERVICED BY THE FACTORY
PUNCH DOES NOT STRIP OUT OF WORKPIECE AFTER PUNCHING	PUNCH OR DIE IS WORN	REPLACE
	IMPROPER DIE FOR MATERIAL OR THICKNESS	CHECK FOR PROPER PUNCH AND DIE SELECTION
	WORKPIECE WAS NOT UNDER BOTH STRIPPERS AND IS BINDING OR PUNCH	MAKE SURE THAT THE MATERIAL IS FULLY SEATED IN THE PUNCHING AREA

COMMERCIAL / INDUSTRIAL LIMITED WARRANTY

Hougen Manufacturing, Inc. warrants its Portable Magnetic Drills, Trak-Star Rail Drills, Hydraulic Rail Saw and Tornado II Paint Shakers for two (2) years, Electro-Hydraulic Hole Punchers for one (1) year, and it's Husqvarna Saw 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 exclusion 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 your nearest Factory Authorized Warranty Service Center, or to Hougen Manufacturing, Inc., 3001 Hougen Drive, Swartz Creek, MI 48473.

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

Hougen®-Ogura™

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