

# PALMGREN®

## 9" BENCH TOP COLD SAW



***Read carefully and follow all safety rules and operating instructions before first use of this product.***

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## GETTING STARTED

The Palmgren 9" Bench Top Cold Saw is a portable and versatile tool useful for cutting all metals and can be setup anywhere there is a stable surface.

### SAVE THIS MANUAL

You will need this manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts lists and diagrams. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep this manual and invoice in a safe and dry place for future reference.

### STRUCTURAL REQUIREMENTS

Make sure all supporting structures and load attaching devices are strong enough to hold your intended loads. If in doubt, consult a qualified structural engineer.

This saw can be mounted to a table using the four bolt holes. Mounting hardware not included.

The saw must be installed on a structurally stable surface. The coolant pump output and inputs may extend below the coolant tank of the saw, when the saw is at rest. Ensure that the saw is installed so that coolant flow is not restricted. Alternatively, the saw's rest position may be adjusted by changing the set bolt's height.

### ELECTRICAL REQUIREMENTS

**NOTE:** Install a differential thermomagnetic switch with characteristics suited to the mains.

Be sure that the voltage labeled on the unit matches your power supply. The circuit must be configured to provide 230V at 10 A, 1-phase, 60 Hz.

Connect the cable to the power supply line observing the color codes of the individual wires, pay particular attention to the ground/earth wire. Connect the saw, making sure that the rotation of the circular blade is in the direction shown by the arrow on the guard.

### TOOLS NEEDED

Standard professional mechanic's hand tool set.

## UNPACKING

### UNPACK AND INSPECT

Be careful not to touch overhead power lines, piping, lighting, etc. if lifting equipment is used. Cold Saw weighs approximately 40 lb. (18 kg), proper tools, equipment and qualified personnel should be employed in all phases of unpacking and installation.

Carton should be handled with care to avoid damage from dropping, bumping, etc. Store and unpack carton with correct side up. Unpack all parts from the container. Check for damage as each piece is removed. Especially check the tubing for kinks, cuts, or other damage that would be detrimental to coolant flow.

After unpacking Saw, inspect carefully for any damage that may have occurred during transit. Check for loose, missing or damaged parts. If any damage or loss has occurred, claim must be filed with carrier immediately. Check for completeness. Immediately report missing parts to dealer.

All tools should be visually inspected before use, in addition to regular periodic maintenance inspections.

### TRANSPORT SECURITY

The machine is equipped with a transport lock and secure during transportation. For unlocking turn the locking lever on the base plate to the right out, and back up again to the left.

### CONTENTS

Palmgren model 9683150 9" Cold Saw is shipped complete in one box. The saw comes assembled as one unit. Additional parts which need to be assembled or fastened to the saw should be located and accounted for before assembling. Saw blade is not included.

- Saw Unit(1)
- Control Lever (1)
- Length Stop Assembly (1)
- 17/19 Wrench (1)
- Operating Manual and Parts List (1)

**IMPORTANT:** Many unpainted steel surfaces have been coated with a protectant. To ensure proper fit and operation, remove the coating. Coating can be easily removed with mild solvents, such as mineral spirits, and a soft cloth.

Avoid getting solution on paint or any of the rubber/plastic parts. Solvents may deteriorate these finishes. Use soap and water on paint, plastic or rubber components. After cleaning, cover all exposed surfaces with a light coating of oil.

Never use highly volatile solvents. Non flammable solvents are recommended to avoid possible fire hazard.

## SPECIFICATIONS

### Model 9683150, 9" Bench Top Cold Saw

Voltage	230V
Amps	9.9A
Watts	1200W
Phase	Single Phase
Motor HP	3 HP
Speeds - Variable	25-85 RPM
Blade Diameter	9.25"
Vise Opening	2.95"
Machine Dimensions	13" x 20" x 17"
Weight	40 lb.
Coolant Tank	1.6 qt.
Max Diameter	
Tube, Cut at 90°	2.75"
Tube, Cut at 45°	2.56"
Square Profile, Cut at 90°	2.26"
Square Profile, Cut at 45°	2.17"
Rectangular Profile, Cut at 90°	2.75" x 1.97"
Rectangular Profile, Cut at 45°	2.36" x 2.17"

## SAFETY RULES

**WARNING:** Completely read and understand this owner's manual before assembly or tool operation. Read and understand the warnings shown on the machine and in this manual. Failure to comply with all of these warnings may cause serious injury or death. The saw was tested for function and safety. Improper operation or misuse may result in injury to the operator or damage to the machine.

### BEHAVIOR IN CASE OF EMERGENCY

In an emergency, immediately release the key switch in the handle or pull the plug from the outlet. This will turn off all the motors.



**PROPOSITION 65 WARNING:** Some dust created by using power tools contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks and cement and other masonry products.
- Arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area and work with approved safety equipment. Always wear **OSHA/NIOSH** approved, properly fitting face mask or respirator when using such tools.

**WARNING:** Always follow proper operating procedures as defined in this manual even if you are familiar with the use of this or similar tools. Remember that being careless for even a fraction of a second can result in severe personal injury.

### EMISSIONS (NOISE LEVEL OF THE MACHINE)

The following noise measurements using a sound level meter were carried out under the following conditions:

Some parts of the machine are in motion simultaneously (depending on the exact duty cycle) and the tool (saw blade) is located in the separation process. The decibels will vary depending on use and use of the machine.

The gauge was about 1 meter from the machine and placed approximately 1.60 m height from the ground.

The test results are expressed in dBA and are the average of a series of three tests, with the microphone was placed one each on the left side, right side and towards the machine.

It gives the following results:

- Saw Blade with max. Diameter at max. Speed (85 RPM): 62.3 dBA
- When cutting the steel (tested: St37 I solid): 85 dBA

The tests were conducted in accordance with the EC Machinery Directives 89/392 and 86/188 and EN /ISO 11202 and 2006/42/EC and 12100-1:2003 , EN ISO 12100-2:2003 , EN ISO 14121-1:2007, EN ISO 14121-2:2007

If the tool is operated in poor or unsuitable conditions, the dBA will vary from the results above.

This could have potentially adverse effects on the health of the operator and function of the machine.

The size and shape of the workpiece, speed of the motor, and the acoustics of the room, will effect the noise level.

**WARNING:** Always follow proper operating procedures as defined in this manual even if you are familiar with the use of this or similar tools. Remember that being careless for even a fraction of a second can result in severe personal injury.

### PREPARING FOR YOUR JOB

- Wear proper apparel. Do not wear loose clothing, neckties, rings, bracelets or other jewelry which may get caught up in moving parts of machine. Do NOT wear gloves.
- Wear protective hair covering to contain long hair.
- Wear safety shoes with non-slip soles.
- Wear safety glasses complying with United States ANSI Z87.1. Everyday glasses have only impact resistant lenses. They are NOT safety glasses. Use guards and eye shields.
- Wear face mask or dust mask if operation is dusty.
- Wear ANSI approved ear protection for extended operation.
- Be alert and think clearly. Never operate power tools when tired, intoxicated or when taking medications that cause drowsiness.
- Focus your attention completely on your work. Looking around, careless actions and other distractions can result in serious injury.

### PREPARING THE WORK AREA FOR YOUR JOB

- Keep work area clean. Cluttered work areas invite accidents.
- Do not use power tools in dangerous environments. Do not use power tools in damp or wet locations. Do not expose power tools to rain.
- Work area should be properly lighted.
- Proper electrical receptacle should be available for tool. Three-prong plug should be plugged directly into properly grounded, three-prong receptacle.
- Extension cords should have a grounding prong and the three wires of the extension cord should be of the correct gauge.
- Keep visitors at a safe distance from work area.
- Keep children out of workplace. Make workshop childproof. Use padlocks, master switches or remove switch keys to prevent any unintentional use of power tools.

## SAFETY RULES (CONTINUED)

### MAINTAINING YOUR TOOL

- Failure to follow the guidelines in this manual can result in serious injury.
- Disconnect the tool completely from its power supply before performing any service, maintenance, repair or adjustments.
- Follow OSHA lock-out, tag-out procedures to prevent accidental machine starts.
- Consult this manual for the proper use, specific maintenance, and adjustment procedures.
- Keep tool lubricated and clean for safest operation.
- Read and understand warnings posted on the machine and in this manual. Replace the warning labels if they become obscured or removed. Failure to comply with all of these warnings can result in serious injury.
- Before using the machine, check for damaged parts. Check for alignment of moving parts, binding, breakage, mounting issues and any other conditions that may affect operation.
- A guard or other part that is damaged should be properly repaired or replaced. Do not perform makeshift repairs. (Use parts list provided to order repair parts.)
- Use compressed air or a suitable brush to clear chips or debris — do not use your hands.
- Remove adjusting tools. Form habit of checking to see that adjusting tools are removed before switching machine on.
- Do not allow any body parts near blade when machine is running.
- Keep all power cords and foreign matter clear of blade when machine is running
- Firmly clamp workpiece in the vise and do not hold with your hands.
- Be careful when cutting short pieces as it could be thrown and cause injury or damage, or may jam the blade inside the guard. If the saw becomes jammed, turn the machine off immediately, open the vise, remove the workpiece by the saw blade, check the blade for cracks or broken teeth and replace it if necessary.
- Keep a constant pressure on the hand lever during the sawing operation.
- Always disconnect the power supply when performing maintenance.
- Never remove or override safety devices. Make sure all guards and covers are fully attached.

## ASSEMBLY

### ASSEMBLING CONTROL LEVER

Before using the saw the control handle must be mounted to the top of machine. Insert the threaded portion into the hole on top of the machine. A bolt may need to be removed first. Turn the whole handle to thread it in, and when close to the end, tighten the nut to lock the handle in place.

### ASSEMBLING THE LENGTH STOP

The length stop is shipped in two pieces, the length stop and the length stop rod. Assemble length stop to the length stop rod. Once assembled it must be threaded into the lower right side of the machine. Lock nut must be tightened against the side of the machine.

### MOUNTING THE BLADE

Select the correct saw blade according to the recommendations in the next section.

Replace the blade when the saw head is in the raised position.

### BLADE INSTALLATION

Select the correct blade, using the blade selection guide in the next section and the table on page 6.

- 1) Raise the head to the upper position.
- 2) The movable part of the blade guard needs to be retracted, there should be a lever that opens it manually. Look for a bracket with a red press button on the back of the protective hood.
- 3) Fit an M12 allen wrench through the hole in the side of the guard, and unscrew the M12 hex screw, that holds the saw blade on.
- 4) Before putting the blade on, check that the blade is clean of oil, chips, dust, or rust spots.
- 5) Fit the blade through the guard, and make sure that you follow the red arrow that shows the direction that blade should face. When mounting it, it should be counterclockwise from the left side of the machine.
- 6) Tighten the M12 screw.
- 7) Release the lever and re-engage the retracted guard cover.

### BLADE SELECTION

Use only original saw blade without pin holes, 235mm × 1mm, 9mm × 32 mm, and the proper gear and proper tooth pitch.

To the max. achieve life, we recommend the saw blades to enter.

The new blade should only be used with about 30% of the calculated feed rate and cutting speed and at approximately three to four cuts.

ZT 2 mm for pipes and profiles under 1.5 mm wall thickness

ZT 3 mm for pipes and profiles 1.5 to 2.5 mm wall thickness

ZT4 mm for pipes and profiles 2.5 to 4.0 mm wall thickness

ZT 5 mm for pipes and profiles up to 4.0 mm wall thickness

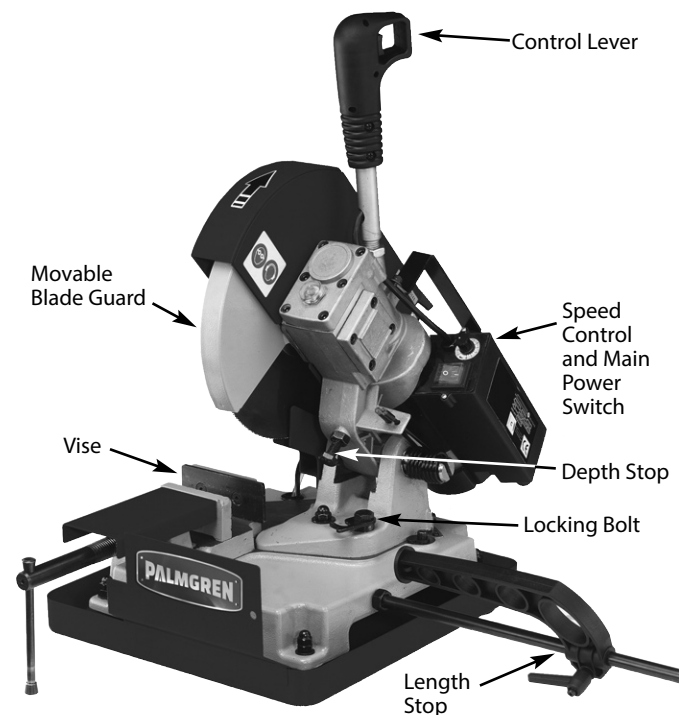


Figure 1 – 9" Bench Top Cold Saw

## OPERATION

### INITIAL BREAK IN RECOMMENDATIONS

Perform a few light test cuts in the initial break in period. During the first 50 hours, regularly check the gear oil lubrication level. During this break in period the motor and transmission operate at higher than normal temperatures and must be regarded as normal.

### TURNING ON THE MACHINE

1. Activate power to the machine using the rocker switch.
2. Select RPM using the knob.
3. Start saw blade using the button in the control lever.

### OPERATING THE SAW

1. Measure the cross section of the material to be cut and then raise the saw head to above the dimension.
2. Open the vise and lay the material under the blade.
3. Select the speed using the RPM knob.
4. Start saw blade using the button in the control lever.
5. The operator must apply the necessary cutting pressure by pulling down on the control lever. Operator should keep a constant pressure to prevent the blade from chattering and so blade cuts smoothly through the material.

**NOTE:** Make a full, single cut. Do not backout blade from a partial cut.

### MITER CUTS

To perform miter cuts from 90° to 45°, loosen the locking bolt and move the swivel head by hand into position using the degree scale.

**IMPORTANT:** After setting angle, the locking bolt must be tightened before operating the saw blade.

**NOTE:** Miter cuts must be performed slower than straight cuts, because material is proportionally larger when cut on an angle.

Regularly clean chips and debris from the base, vice and saw head to allow smooth operation.

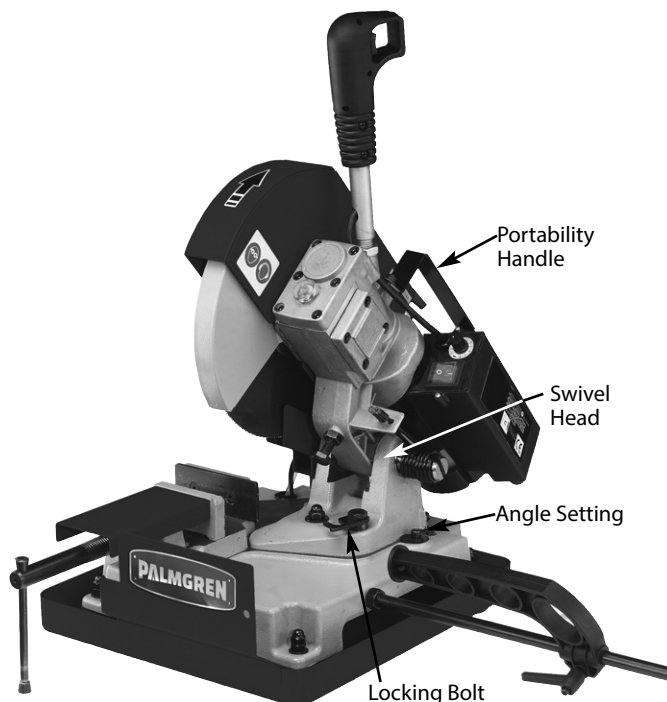


Figure 2 – 9" Bench Top Cold Saw

## COOLANT SYSTEM

The Cold Saw is equipped with an automatic cooling device. When the machine is powered on, the electric pump starts pumping the coolant from the coolant tank, through the self-aspirated adjustable valve and sprays onto the blade.

**NOTE:** If the pump does not appear to be working, check and clean the filter as needed. The filter is located beneath the clamping vise.

## MAINTENANCE

### REPLACE OF GEAR BOX OIL

1. Remove caps (Ref. Nos. 38 and 19) let all the used oil flow out into a container which should have a label indicating the contents for the purposes of disposal.
2. Replace cap (Ref. No. 19).
3. Feed 0.2 liters of oil (as specified above) into the oil feed hole located on the upper part of the gear box.
4. Replace cap (Ref. No. 38).

### CLEAN AND LUBRICATE MOVING PARTS OF VISE

Clean and grease the parts worked by the bench (Ref. No. 2), the vise (Ref. No. 9) and the vise screw (Ref. No. 6).

### CLEAN COOLANT TANK AND CHECK FILTER

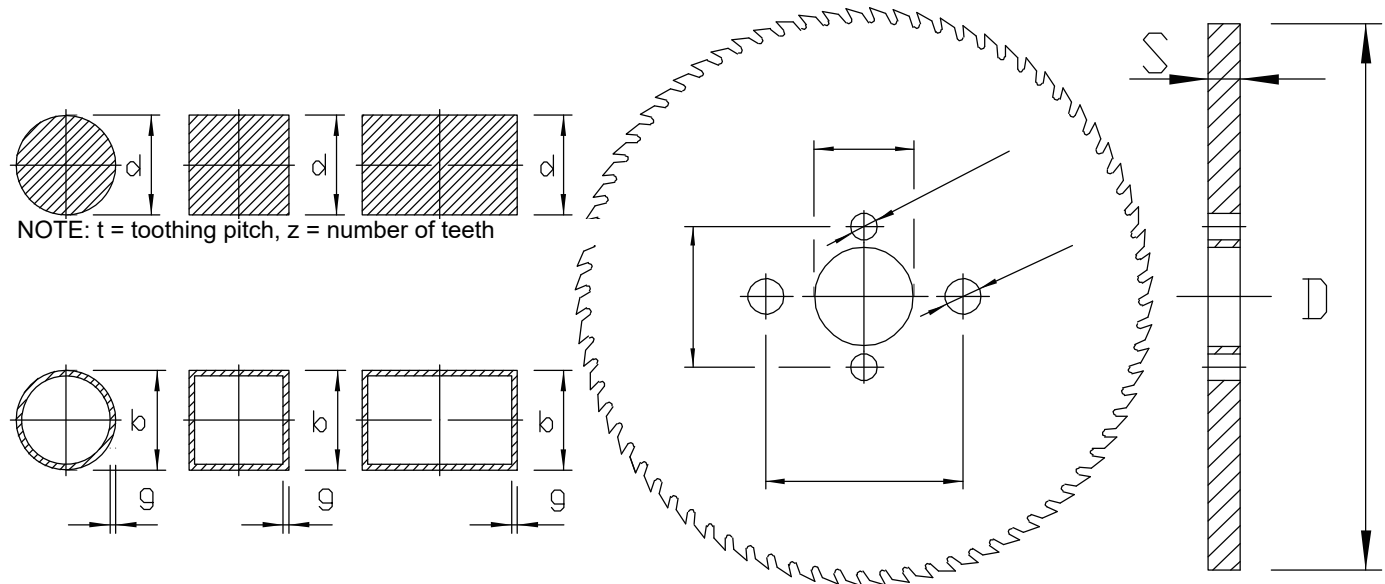
1. Empty the coolant from the tank by means of the tap located on the rear part of the machine tank (after moving the liquid feed pipe away from this).
2. Collect the coolant in a container for the future disposal.
3. Clean out the shavings and the metallic powder, taking care not to scatter this over the machine, especially around the motor and the box containing the electrical equipment.
4. Reconnect the pipe, check filter and if necessary replace it.
5. Fill the tank with the amount and liquid stated previously.

### SUGGESTED MAINTENANCE SCHEDULE

Regularly:	Clear the coolant pump.
Every 350–400 hours use:	Change the oil in the gear box with 85W or 65W.
Every 350–400 hours use:	Change the carbon brush of the motor.

<b>Blade Selection (values in parentheses are in mm)</b>								
<b>Diameter</b>		<b>7.78" (200)</b>	<b>8.86" (225)</b>	<b>9.84" (250)</b>	<b>10.83" (275)</b>	<b>11.81" (300)</b>	<b>12.40" (315)</b>	<b>13.78" (350)</b>
<b>Thickness</b>		<b>0.07" (1.8)</b>	<b>0.07" (1.8)</b>	<b>0.08" (2)</b>	<b>0.10" (2.5)</b>	<b>0.10" (2.5)</b>	<b>0.10" (2.5)</b>	<b>0.12" (3)</b>
b=0.39"-3.15" (10-80) g<(2)	t	0.12" (3)	0.12" (3)	0.12" (3)	0.12" (3)	0.12" (3)	0.12" (3)	0.12" (3)
	z	7.87" (200)	9.06" (230)	9.84" (250)	11.02" (280)	11.81" (300)	12.60" (320)	13.78" (350)
b= 0.39"-3.15" (10-80) g=0.08"-0.16" (2-4) d=0.39"-0.71" (10-18)	t	0.20" (5)	0.20" (5)	0.20" (5)	0.20" (5)	0.20" (5)	0.20" (5)	0.20" (5)
	z	5.12" (130)	5.51" (140)	6.30" (160)	6.70" (170)	7.48" (190)	7.87" (200)	8.66" (220)
b= 0.39"-3.15" (20-80) g=0.16"-0.39" (4-10) d=0.71"-1.18" (18-30)	t	0.31" (8)	0.31" (8)	0.31" (8)	0.31" (8)	0.31" (8)	0.31" (8)	0.31" (8)
	z	3.15" (80)	7.48" (90)	3.94" (100)	4.33" (110)	4.72" (120)	4.72" (120)	5.51" (140)
d=1.18"-1.57" (30-40)	t	0.39" (10)	0.39" (10)	0.39" (10)	0.39" (10)	0.39" (10)	0.39" (10)	0.39" (10)
	z	2.36" (60)	2.76" (70)	3.15" (80)	7.48" (90)	7.48" (90)	3.94" (100)	4.33" (110)
d>1.57" (40)	t				0.47" (12)	0.47" (12)	0.47" (12)	0.47" (12)
	z				2.76" (70)	3.15" (80)	3.15" (80)	7.48" (90)

NOTE: t = tothing pitch, z = number of teeth

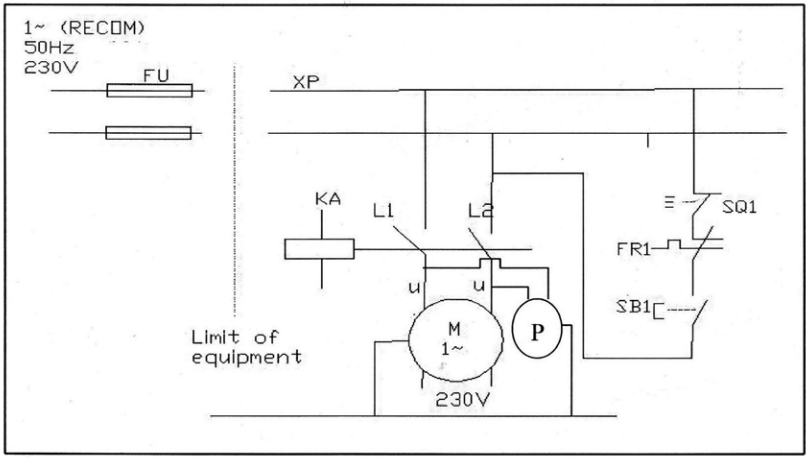


NOTE: t = tothing pitch, z = number of teeth

# TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Motor does not work	1. Motor, power cord or plug is defective  2. Fuse in the switch box blown  3. No voltage supplied  4. Motor thermal switch triggered	1. Replace defective parts.  2. Check to see if the fuses are intact, and change them out when needed.  3. Check the wall for voltage supply.  4. Release the control lever button, then turn the main switch off, then on again
Motor overheated	1. Thermal switch triggered  2. Motor experiencing excessive cutting pressure  3. Motor defective	1. Check your blade  2. Operator should lessen pressure on control lever.  3. Replace motor
Cut face is too rough	1. Cutting speed is too slow or fast.  2. Incorrect position of the workpiece in vise  3. Waviness in the cut face  4. The blade is worn or unsuitable for the workpiece	1. Check the cutting parameters in the cutting table.  2. Check the position, tightness and squareness of the workpiece in the vise.  3. Check teeth of saw blade for wear. Check for correct RPM. Check correct cutting pressure.  4. Replace blade. Check the cutting parameters in the cutting table
If blade locks into material	1. The saw blade is not sharp enough  2. The teeth are too big for the material. Especially if it's very thin tube. Ex. 0.02" thickness  3. Pushing too hard into material.	1. Replace blade  2. Replace blade. Check the cutting parameters in the cutting table  2. Operator should lessen pressure on control lever.

## CIRCUIT DIAGRAM



## ELECTRICAL PARTS

Ref	Description	Part No.	Qty.
1	SB1 - TR26-21C-13D/L SM-8 4P Switch with light (250VAC)	965179201	1
2	Supply cable (600V, 10A, 3G/0.75mm)	965179301	1
3	M - Motor (1500W/230V/2A)	965174701	1
4	SQ1 - Zippy microswitch VMN-15, 15A	965179401	1
5	P - Pump (230V/14W/015A)	965176501	1

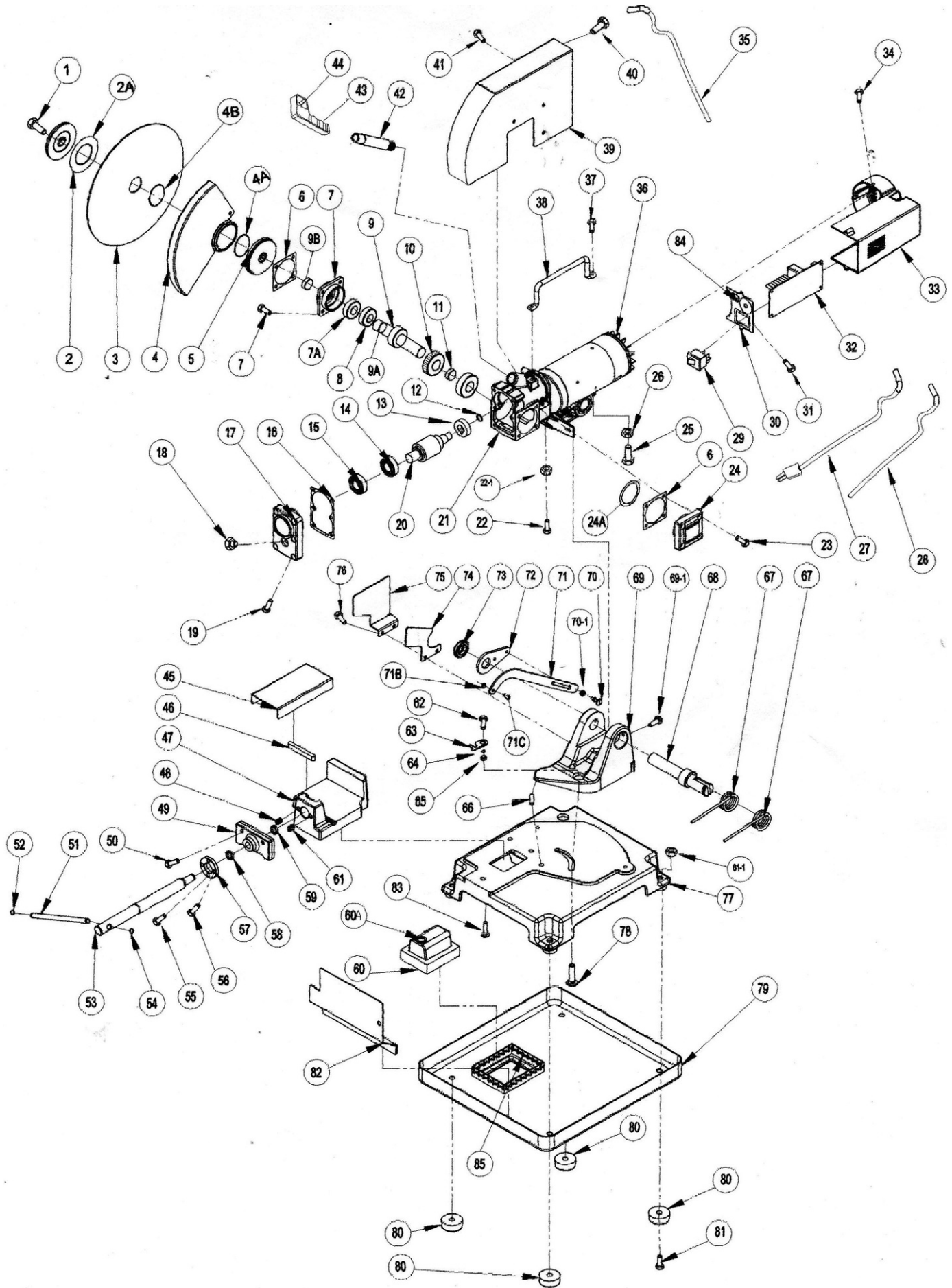


Figure 3 – Replacement Parts Illustration for 9" Bench Top Cold Saw



## REPLACEMENT PARTS LIST FOR 9" BENCH TOP COLD SAW

Ref. No.	Description	Part No.	Qty.	Ref. No.	Description	Part No.	Qty.
1	Hex Screw M12x25	*	1	47	Vise	965175601	1
2	Front Blade Holder	965172101	1	47A	Vise Plate	965175701	1
2a	Rubber Brake	965172201	2	48	Spring	965175801	1
3	Blade	965172301	1	49	Movable Vise	965175901	1
4	Movable Blade Cover	965172401	1	50	Screw 5x8	*	1
4A	O-Rubber Ring 2.5x49.5	*	1	51	Handle Rod	965176001	1
4B	C-Ring S48	*	1	52	Knob	965176101	1
5	Rear Blade Holder	965172501	1	53	Acme Screw	965176201	1
6	Rubber Sheet	965172601	1	54	Knob	965176301	1
7	Left Alu Cover	965172701	1	55	Cap Screw 6x20	*	1
7-1	Flat Head Screw 5x12	*	1	56	Cap Screw 5x25	*	1
7A	Oil Seal 26x37x7	*	1	57	Screw Set Plate	965176401	1
8	Bearing 6004	*	2	58	Washer 6201-2	*	1
9	Output Shaft	965172801	1	59	Washer 6201-4	*	1
9A	O-Ring 2.5x14	*	1	60	Pump	965176501	1
9B	Bushing 10mm	965172901	1	60A	Pump Bushing	965176601	1
10	Worm Gear	965173001	1	61	Spring	965176701	1
11	Bushing	965173101	1	62	Hex Screw 10v25	*	1
12	Washer 6302	*	2	63	Fix Plate	965176801	1
13	Gear	965173201	1	64	Washer 626	*	1
14	Bearing 6202	*	1	65	Bushing	965176901	1
15	Sliding Bearing 51202	*	1	66	Pin 8V36	*	1
16	Front Rubber Sheet	965173301	1	67	Spring	965177001	1
17	Front Alu Cover	965173401	1	68	Main Shaft	965177101	1
18	Oil Plug	965173501	1	69	Swivel Head	965177201	1
19	Cap Screw 5x16	*	1	69A	Diaraph	965177301	1
20	Worm Shaft	965173601	1	69-1	Set Screw 6x10	*	1
21	Gear House	965173701	1	70	Fix Screw	965177401	1
22	Hex Screw 10x35	*	1	70A	Spring	965177501	1
22-1	Hex Nut M10	*	1	71	Pull Rod	965177601	1
23	Cap Screw 5x16	*	1	71B	Washer #5	*	1
24	Right Alu Cover	965173801	1	71C	Fix Screw	965177701	1
24a	Washer	965173901	1	72	Pull Rod Fix Plate	965177801	1
25	Hex Screw 8x40	*	1	73	Rubber Nut	965177901	1
26	Hex Nut M8	*	1	74	Right Safety Plate	965178001	1
27	Plug Cable	965174001	1	75	Left Safety Plate	965178101	1
28	Cable	965174101	1	76	Screw 5x8	*	1
29	Switch	965174201	1	77	Base	965178201	1
30	Switch Plate	965174301	1	78	Carriage Bolt 3/8x1-1/2	*	1
31	Screw 4x5	*	1	79	Water Tank	965178301	1
32	PC-Board	965174401	1	80	Rubber Pad	965178401	4
33	Motor Cover	965174501	1	81	Hex Screw 8x45	*	1
34	Screw 4x10	*	1	81-1	Hex Nut M8	*	1
35	Water Pipe	965174601	1	82	Water Plate	965178501	1
36	Motor	965174701	1	83	Cap Screw 8x20	*	3
37	Cap Screw 8x12	*	1	84	Knob	965178601	1
38	Handle	965174801	1	85	Voiceless Cotton	965178701	1
39	Fix Cover	965174901	1	86	Nut	965178801	1
40	Value Bolt	965175001	1	87	Rod Stock Stop	965178901	1
41	Screw 5x8	*	1	88	Bolt M6	*	1
42	Operation Handle	965175101	1	89	Stop Bracket	965179001	1
43	Plastic Handle	965175201	1	90	Hex Screw	965179101	1
44	Limit Switch	965175301	1	Δ	Length Stop	965182301	1
45	Vise Cover	965175401	1	Δ	Length Stop Rod	965182401	1
46	Rubber	965175501	1	Δ	Length Stop Nut	965182501	1

(Δ) Not shown. (N/A) Not available as repair part. (\*) Standard hardware item, available locally.





## PALMGREN WARRANTY

C.H. Hanson / Palmgren warrants their products to be free of defects in material or workmanship. This warranty does not cover defects due directly or indirectly to misuse, abuse, normal wear and tear, failure to properly maintain the product, heated, ground or otherwise altered, or used for a purpose other than that for which it was intended.

The warranty does not cover expendable and/or wear part (i.e. v-belts, screws, abrasives, jaws), damage to tools arising from alteration, abuse or use other than their intended purpose, packing and freight. The duration of this warranty is expressly limited to the terms noted below beginning from the date of delivery to the original user.

**The Palmgren branded items carry the following warranties on parts:**

**All arbor presses, vises, clamps, positioning tables, tombstones, jack screws and vise accessories - LIFETIME.**

**All bench grinders, drill presses, tapping machines, band saws, lathes, milling machines, abrasive finishing machines and work stands - 3 YEARS.**

The obligation of C.H. Hanson / Palmgren is limited solely to the repair or replacement, at our option, at its factory or authorized repair agent of any part that should prove inoperable. Purchaser must lubricate and maintain the product under normal operating conditions at all times. Prior to operation become familiar with product and the included materials, i.e. warnings, cautions and manuals.

**Failure to follow these instructions will void the warranty.**

This warranty is the purchaser's exclusive remedy against C.H. Hanson for any inoperable parts in its product. Under no circumstances is C.H. Hanson liable for any direct, indirect, incidental, special or consequential damages including loss of profits in any way related to the use or inability to use our products. This warranty gives you specific legal rights which may vary from state to state.

# PALMGREN®

**Palmgren - a C.H. Hanson Company**  
**2000 N. Aurora Rd., Naperville, IL 60563 U.S.A.**  
**or call 1-800-827-3398**