PALMGREN®

14″ VARIABLE SPEED COLD SAWS 9683151 3-PHASE AND 9683154 1-PHASE

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

965197301-0524

TABLE OF CONTENTS

GETTING STARTED

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.

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.

- Circuit for 9683151 must provide 230V at 9.9A, 3-phase, 60 Hz.
- Circuit for 9683154 must provide 230V at 9.9A, 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

TRANSPORT

Cold Saw weighs approximately 550 lb (250 kg), proper tools, equipment and qualified personnel should be employed in all phases of unpacking and installation.

When transporting in its own packaging, use a forklift truck or hand trolley. Be careful not to touch overhead power lines, piping, lighting, etc. with lifting equipment .

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.

UNPACK AND INSPECT

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.

IMPORTANT: Refer to Installation section, page 5.

CONTENTS

Palmgren models 9683151 and 9683154 14" Cold Saws are 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

	9683151	9683154
Voltage	230V	230V
Amperage	9.9A	9.9A
Watts	2250 W	2250 W
Phase	3 PH	1 PH
Motor HP	3 HP; 1720 RPM	3 HP; 1720 RPM
Speeds, Variable	24 – 120 RPM	24 – 120 RPM
Blade Dimensions	14″×32mm×2.5mm	14″×32mm×2.5mm
Vise Opening	6.7″	6.7″
Machine & Stand Dim.	47.2″×39″×67.7″	47.2″×39″×67.7″
Weight	550 lb.	550 lb
Coolant Motor	1/8 HP	1/8 HP
Coolant Tank	5.25 qt.	5.25 qt.
Stand Dimensions	23.6″×22.8″×28.3″	23.6″×22.8″×28.3″

14″ Variable Speed Cold Saw Maximum Diameter Table

	Cut at 90°	Cut at 45°
Round	3.35″	2.95″
Tube	4.70″	3.95″
Square Profile	4″×4″	3.35″×3.35″
Rectangular Profile	6.3″×3.5″	3.35″×2.75″

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 my result in injury to the operator or damage to the machine.

BEHAVIOR IN CASE OF EMERGENCY

Press the red emergency button when there are conditions of danger or malfunctions in general. This will stop machine operation immediately.

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.

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.

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

SAFETY RULES (CONTINUED)

- Firmly clamp workpiece in vise. 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.

KNOW YOUR MACHINE

MACHINE DIMENSIONS

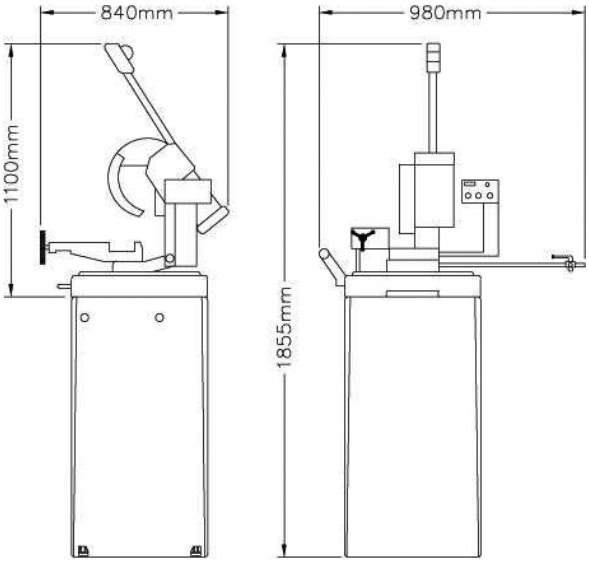


Figure 1

BLADE GUARD SAFETY

- The blade guard is a self adjusting cover that prevents contact with the blade. Never use the machine without the blade guard.
- Never handle blade guard while the blade is running.

HEAD ASSEMBLY

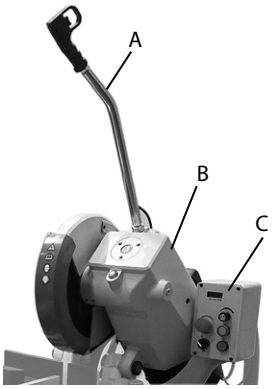


Figure 2 - Head assembly.

A Control Lever: A long angled lever with a handle grip and trigger switch for starting, raising, and lowering the saw blade head assembly.

B Main Support Frame: The central part of the assembly, houses the gear system and oil tank.

C Control Panel: Operational controls.

CONTROL PANEL

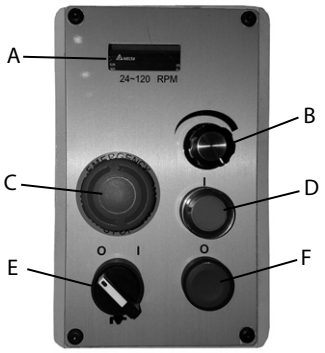


Figure 3 - Control panel.

A LED Speed Readout B Blade Speed Knob
C Emergency STOP D Power Light
E Coolant Switch F Off Button

CONTROL LEVER

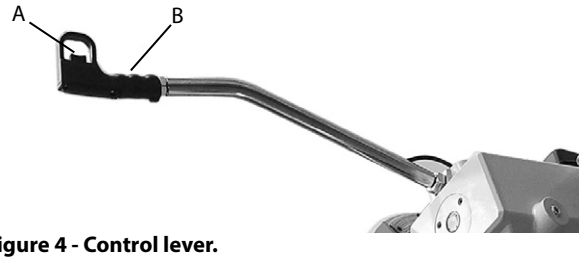


Figure 4 - Control lever.

A Trigger Switch B Control Handle

MACHINE BASE

A heavy cast iron structure that supports the miter system, vise system, and head assembly.

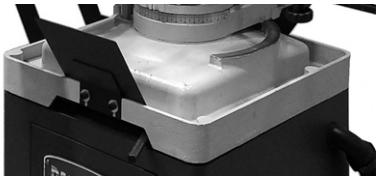


Figure 5 - Machine base.

VISE

A clamping system that provides the basic support and security for the work material. Operations are conducted by hand-wheel, which opens and closes the vise jaws. The clamping vise can be adjusted forward and backward to clamp workpiece of various sizes.

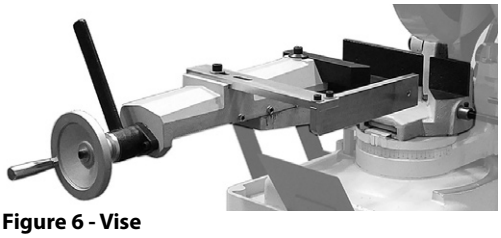


Figure 6 - Vise

KNOW YOUR MACHINE (CONTINUED)

SUPPORT ROLLER

Device that support longer sized material. The roller assists stock moving through the vise.

Figure 7 - Support roller.

STAND

Support structure for the machine and houses electrical and coolant pump.

Figure 8 - Stand.

COOLANT PUMP

Found within the machine stand, the coolant pump is a self contained system that includes a tank, pump motor, filters and hoses.

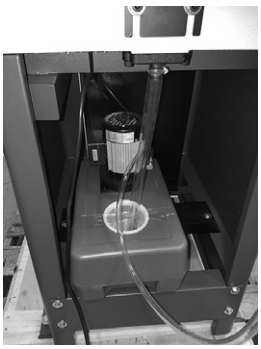


Figure 9 - Coolant pump.

INSTALLATION

Cold Saw weighs approximately 550 lb (250 kg), proper tools, equipment and qualified personnel should be employed in all phases of unpacking and installation.

When transporting in its own packaging, use a forklift truck or hand trolley. Be careful not to touch overhead power lines, piping, lighting, etc. with lifting equipment.

MINIMUM REQUIREMENTS FOR HOUSING THE MACHINE

- The main voltage and frequency complying with the requirements for the machine's motor.
- Environment temperature from –14°F to +122°C.
- Relative humidity not over 90%.

ANCHORING THE MACHINE

- Position the machine on a firm and level concrete floor.
- Ensuring machine is sitting level.
- Maintain a minimum distance of 32" from the wall to rear of the machine.
- Anchor the machine to the ground, as shown in the diagram, using screws and expansion plugs or sunken tie rods that connect through holes in the base of the stand.

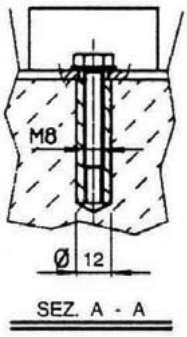


Figure 10 - Anchoring the machine.

POSITIONING THE MACHINE

Please follow the instruction bellow when unpacking the machine from the package.

- Take out the accessory box from the rear for assembling some parts later.
- Take out the machine from the package to the intended working location by hoisting with the belts. The load capacity is about 550 lb. at point E, see figure 11.

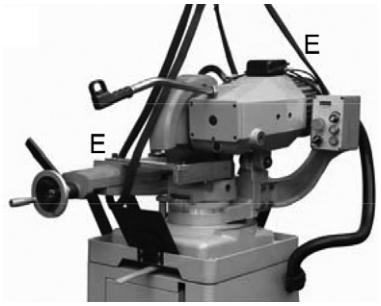


Figure 11- Positioning the machine.

METHOD ONE:
Use a sling. Carefully wrap the sling around the collar of the moveable jaw and motor mount (E), see figure 11.

METHOD TWO:
Using lift rings. Attach lifting rings to three points on the base of the machine. Attach a three-point sling with grab or sling hooks to the lift rings.

- The stand of the cold saw has four mounting holes, two holes on each side of the stand. The cold saw should be kept level and rest solidly on the floor.
- Please refer to the anchoring section above. When securing the stand to the floor, apply even torque to the fasteners to prevent distortion of the stand.

ASSEMBLY

ATTACH CONTROL LEVER TO HEAD ASSEMBLY

1. Insert the threaded end of the control lever (A) into hole (B).
2. Turn the control lever along the shaft to screw until tight.
3. Align the lever so that the trigger switch (C) points up.

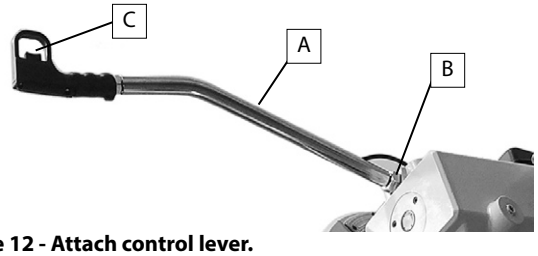


Figure 12 - Attach control lever.

CONNECT ELECTRIC WIRE TO MOTOR

1. Locate the open socket (A) at the side of the electrical box on the top of the motor.
2. Plug in the control handle cable into the open socket (B).
3. Use a wrench to screw in the cable connecter nut .

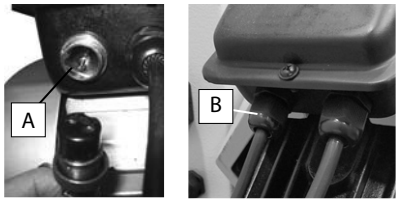


Figure 13 - Connect electric wire to motor.

ATTACH SUPPORT ROLLER TO LEFT SIDE OF BASE

1. Place the support roller (A) up next to the machine base.
2. Align the two slots (B) in the base of the support roller with the matching screw holes on the base of the machine.
3. Apply an M10 washer for each of two M10×25 hex head bolts.
4. Loosely screw the hex head bolts into the aligned slot and holes.
5. Adjust the height of the support roller. Place a level across the mouth of the vise and support roller. If a long level in not available, use a straight bar or piece of material then place a small level on top. Raise or lower the support roller until level.
6. Secure the support roller into place. Use a wrench to tighten down the two hex head bolts.

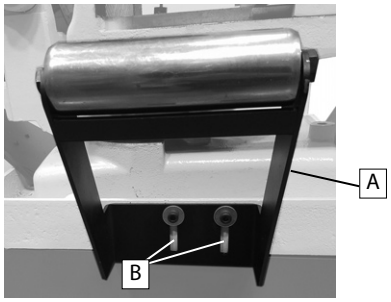


Figure 14 - Attach support roller to left side of base .

ATTACH BAR STOP TO VISE

1. Insert the threaded end of long rod (A) into the side of the vise.
2. Turn the long rod clockwise until snug.
3. Use a hex wrench 5mm to lock the screw M12×10 (B) on the sleeve counter-clockwise, so that bar stop unit is secure.

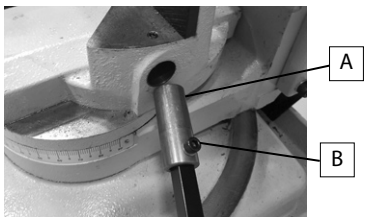


Figure 15 - Attach bar stop to vise.

ASSEMBLE COOLANT TANK

1. Insert the coolant pump (A) into the coolant tank (B).
2. Apply an M6 washer to each of two M6×20 screws (C).
3. Secure pump to tank with prepared screws.
4. Place the hose clamp (D) onto the 0.375" flow tube (E).
5. Connect the flow tube to the hose clamp.
6. Use a flat head screwdriver to tighten the hose clamp.

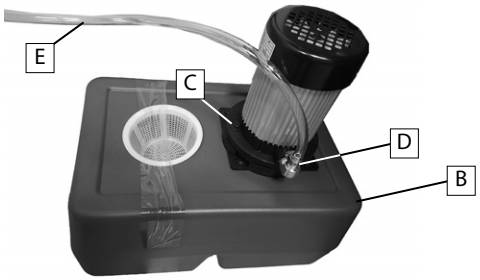


Figure 16 - Assemble coolant tank.

INSTALL COOLANT TANK

1. Orient the coolant pump towards the rear opening of machine stand.
2. Place the coolant tank onto the coolant platform. The coolant tank contains a divider that forms a trough in the bottom of the tank. This trough fit over the vertical lip of the coolant platform.
3. Insert one end of the 0.5" drain hose onto the hose connector on the underside of the machine base.
4. Place the other end into the insert of the coolant tank.

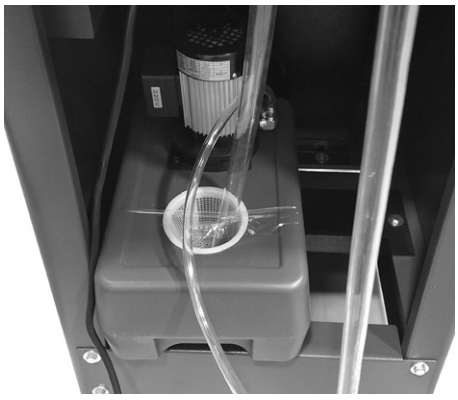


Figure 17 - Install coolant tank.

ASSEMBLY (CONTINUED)

INSTALL FRONT AND BACK SPLASH PLATES

1. Insert short, front splash plate onto the front sidewall of machine base.
2. Align the two slots in the base of the splash plate with the matching screw holes on the machine base.
3. Apply a washer for each of two hex socket head screws M8×20.
4. Loosely screw the socket hex head screws into the aligned slot and holes.
5. Insert a longer one of splash plate onto the rear sidewall of the machine base. This plate need not be secured with screws to allow free movement or convenient removal.
6. Adjust the splash plate to the proper position and tighten down the screws to secure.

7 Insert longer, back splash plate onto the rear sidewall of the machine base. This plate need not be secured with screws to allow free movement and convenient removal.

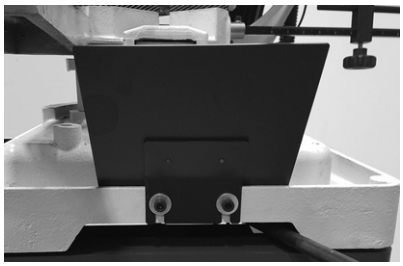


Figure 18 - Front splash plate.

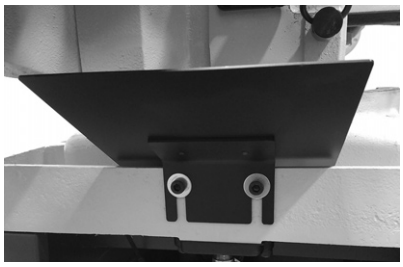


Figure 19 - Back splash plate.

ELECTRICAL CONNECTION OF MACHINE

- Make sure whether the voltage of the machine is 230V 1-phase or 230V 3-phase prior to connection.
- The control electrical box is located at the front of the stand.
- The power connection cable is at the rear of the electrical box as shown in the figure 20.
- This machine uses an inverter to change the speed rate from 24 – 120 RPM. Please refer to the LED speed readout on the control panel.

Figure 20 - Electrical connection of machine.

OPERATION

- To obtain good break-in of the machine, it is advisable to start using it at intervals of about half an hour. This operation should be repeated two or three times, after which the machine may be used continuously.
- Always check that the workpiece is securely clamped and that long pieces are suitably supported.
- Do not use a saw blade size that is outside the limits of the machine specifications.
- Before operating, all the main parts of the machine must be set to optimum conditions.

IMPORTANT: Press the red emergency button (E) when there are conditions of danger or malfunctions in general. This will stop machine operation immediately.

OPERATION CYCLE CHECK LIST

The saw is now ready to cut, but bear in mind that cutting speed, saw blade type, and cutting pressure are all important factors in cutting quality and machine performance.

1. Set the miter cut angle.
2. Open the vise.
3. Load the workpiece.
4. Clamp the workpiece.
5. Adjust the bar stop for cutting length.
6. Check that the main power light is ON (D).
7. Set the speed (B). Read the speed in the LED speed readout (A).
8. Set the coolant switch (E).
9. Grasp the control handle (G).
10. Press the trigger switch (H) to start.
11. Pull down the control handle (G). Apply a steady and constant pressure.
12. After cut off raise control handle slowly.
13. Press the stop button (F).
14. Use vise lever to open the vise.
15. Remove or feed the workpiece forward.

- Repeat operation cycle.

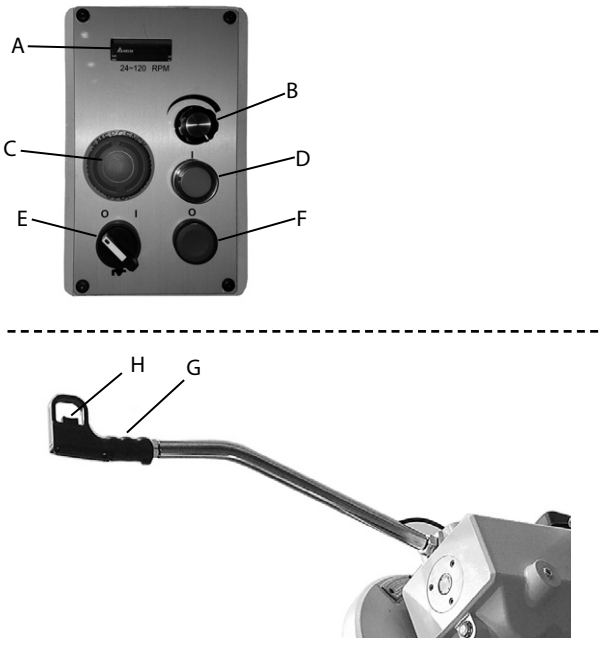


Figure 21 - Operation Cycle

OPERATION (CONTINUED)

MITER ANGLE

- Use the miter lock lever (A) to release the saw blade head assembly.

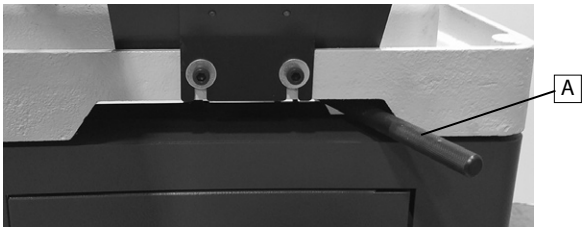


Figure 22 - Miter angle, miter lock lever.

- Rotate the saw blade head assembly to the correct miter angle.
- Check the miter angle on the angle indicator (B).
- Use the miter lock lever to lock in the miter angle.

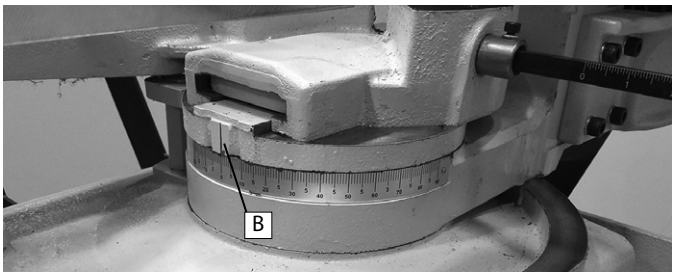


Figure 23 - Miter angle, angle indicator and angle gauge.

VISE OPERATION

For workpieces that vary in width:

- Use the hand-wheel to open and close the vise jaw for workpieces that vary in width.
- Rotate the hand-wheel (A) counter-clockwise to open the vise.
- Rotate the hand-wheel clockwise to move the vise jaw (C) to the workpiece.

For workpieces with the same width:

- The quick-clamp vise lever allows the operator to quickly clamp and unclamp workpieces of same width. This allows for efficient use of machine for loading and feeding forward workpieces.
- Rotate the vise lever (B) clockwise to clamp the workpiece.
- Rotate the vise lever counter-clockwise to unclamp the workpiece.

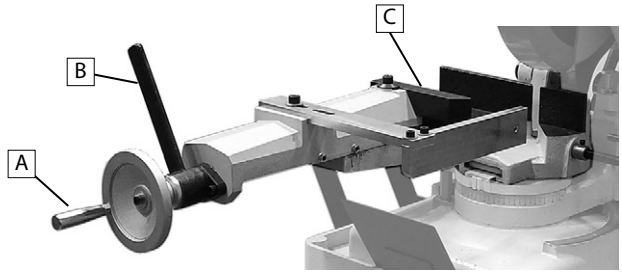


Figure 24 - Vise operation.

The vise can both rotate and extend/retract out from the mitering motor frame. Both are locked by the miter lock (shown in Fig 22 A).

ROTATE

- Remove the length stop from the vise.
- Loosen the miter handle.
- Rotate the vise to the right, while bracing your hand against the motor frame.
- Tighten the miter handle.

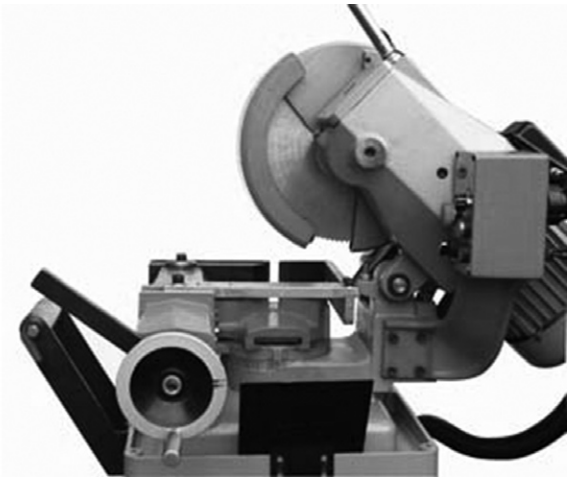


Figure 25 - Vise operation.

EXTEND/RETRACT

- Loosen the miter handle.
- Pull the vice towards you.
- Tighten the miter handle.

LOADING THE WORKPIECE

1. Use the vise hand-wheel to open the vise wider than the width of the workpiece.
2. Measure and mark off the length of material desired to be cut-off.
3. Place the workpiece on the flat surface in between the vise jaws.
4. Slide the workpiece across the vise so that the length mark lines up with the saw blade.
5. Press the workpiece up against the back vise jaw.
6. Use the vise hand-wheel to clamp the workpiece.

If repetitive cuts are required for material of the same width:

1. Use the vise hand-wheel to approach the workpiece, but leave an approximate 5mm gap between the mobile vise jaw and the workpiece.
2. Then use the vise lock lever to clamp and unclamp the workpiece.

IF SAW BLADE GETS STUCK IN THE WORKPIECE

1. Immediately release the trigger switch.
2. Switch off the machine before raising the machine head.
3. Open the vise and remove the workpiece.
4. Check the saw blade teeth for any damage. If any of the teeth are broken, replace the saw blade.

OPERATOR POSITION

The operator should stand in front of the machine using a single hand to grip the control handle.

Figure 26 - Operator position.

OPERATION (CONTINUED)

ADJUSTING THE MACHINE

WARNING: Before performing the following operations, the electric power supply and the power cable must be completely disconnected.

- Before carrying out any repairs to the machine, consult a technician.

MITER

If excessive play is found in the miter, tighten the screws. Avoid over tightening.

ADJUSTING THE MITER LOCK LEVER

If frame impedes the miter lock lever:

1. Loosen screw (A)
2. Support bushing (B) so that it doesn't fall out.
3. Pivot the miter lever (C) to the "unlock side" to allow a greater range of motion.
4. Tighten screw (A).

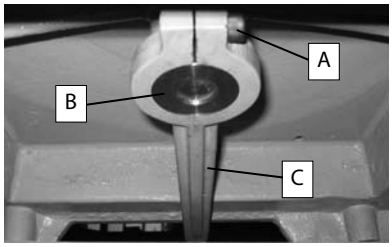


Figure 27 - Adjusting the miter lock lever.

CHANGING THE SAW BLADE

IMPORTANT: When starting to cut with a new saw blade, in order to safeguard its life and efficiency, the first two or three cuts must be made while exerting a slight pressure on the workpiece, so that the time taken to cut is about double the normal time.

1. Release mobile guard (A) by removing the hex socket screw (B).
2. Rotate the mobile guard back.
3. Place a block of wood into the vise.
4. Lower the head assembly to rest the saw blade on the block of wood.
5. Use a hex wrench to remove the hex socket screw (C).
6. Rotate the saw blade in the clockwise direction to loosen it (because it has a left-handed thread).

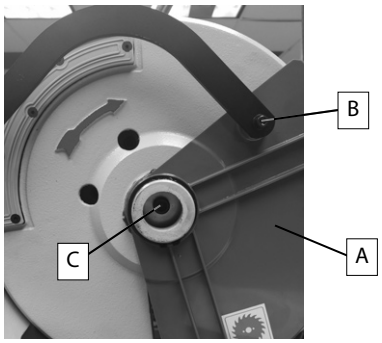


Figure 28- Changing the saw blade.

7. Remove the saw blade (D) and flange (E) from the head assembly.
8. Slip off the flange from the saw blade and place the flange onto the replacement saw blade.
9. Continue the replacement of the saw blade in reverse order of removal.

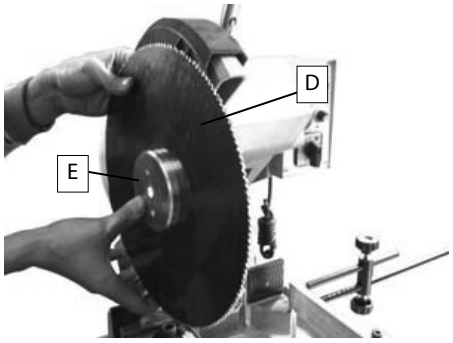
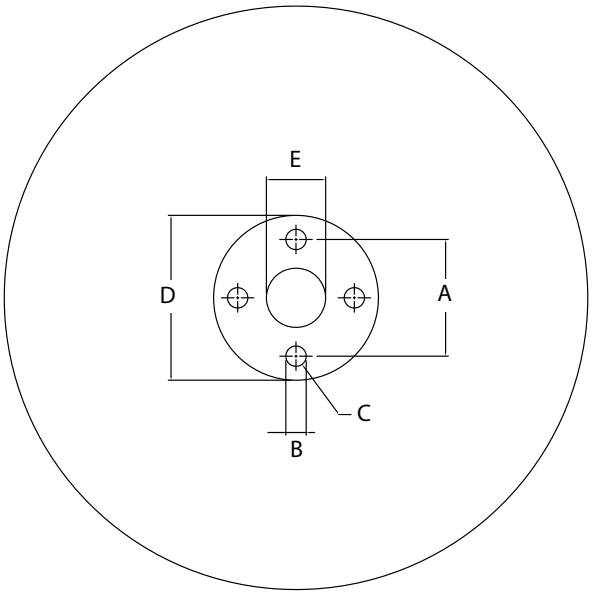


Figure 29 - Changing the saw blade.



A) Distance between center of pinholes = 2.48″
B) Diameter of pinhole = 0.43″
C) Number of pinholes may be 2 or 4
D) Diameter of Boss = 3.50″
E) Diameter of center hole = 0.43″

Figure 30 - Saw blade dimensions.

CLEANING AND ACCESSING THE COOLANT SYSTEM

1. Pull out the drain hose from the filter (A).
2. Pull out the coolant tank from the coolant platform in the stand.
3. Remove the filter from the tank and pour out the coolant.
4. Wash out the dirt and debris and replace the filter (A).
5. Fill with coolant solution of 1:10 ratio of coolant to water.
6. Replace the coolant tank in reverse order of removal.

Figure 31 - Cleaning and accessing the coolant system.

MAINTENANCE

ROUTINE AND SPECIAL MAINTENANCE

The maintenance schedule has been divided into daily, weekly, monthly, and six-monthly intervals. Neglecting the machine maintenance will result in premature wear and poor performance.

DAILY MAINTENANCE

- Perform a general cleaning by removing dust and shavings from the machine.
- Top off the coolant.
- Inspect the saw blade for wear.
- Raise the head into a high position to reduce stress on the return spring.
- Check that the shields and emergency stops are in good working order.

WEEKLY MAINTENANCE

- Thoroughly clean the machine including the coolant tank.
- Clean and grease the vise screw and sliding surfaces.
- Clean the housing for saw blade.
- Sharpen the saw blade teeth.

MONTHLY MAINTENANCE

- Check that all screws on the motor, the pump, the vise jaws, and the guard are tight and secure.
- Check that the guard is free from defect.
- Grease the hinge pin for the head assembly.

SIX-MONTHLY MAINTENANCE

Change the oil in the reduction unit using oil type DN SUPER GEAR 460 by IDEMITSU or DAPHON or equivalent oil, proceeding as follows:

1. Remove the connecting plug from the electric box and unscrew the control handle.
2. Drain off the old oil from the drain hole (B).
3. Pour in new oil to the mark (A), through the hole for the control handle, keeping head in a horizontal position. Fill with at 1.5 liters of oil.
4. Reassemble all the parts.

- Check continuity of the equipotential protection circuit.

OILS FOR LUBRICATING COOLANT

Considering the vast range of products on the market, the user can choose the one most suited to his own requirements, using as reference the type SHELL LUTEM OIL ECO.

IMPORTANT: The minimum percentage of oil diluted in water is 8 to 10%.

OIL DISPOSAL

Oil products must be disposed in a proper manner following local regulations.

SPECIAL MAINTENANCE

Special maintenance operations must be carried out by skilled personnel. However, we advise contacting dealer and/or importer.

The term special maintenance also covers the resetting of protection and safety equipment and devices.

DEACTIVATING THE MACHINE

If the machine is to be inactive for a long period, prepare the machine as follows:

- Detach the plug from the electric supply panel.
- Release the head return spring.
- Empty the coolant tank.
- Carefully clean and grease the machine .
- If necessary, cover the machine.

WIRING DIAGRAM AND PARTS LIST

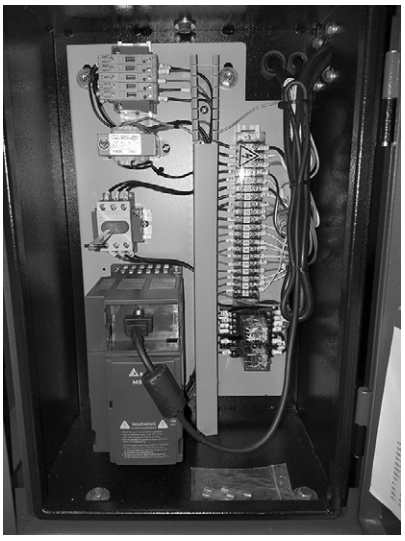


Figure 32 - 14˝ variable speed cold saw electrical box.

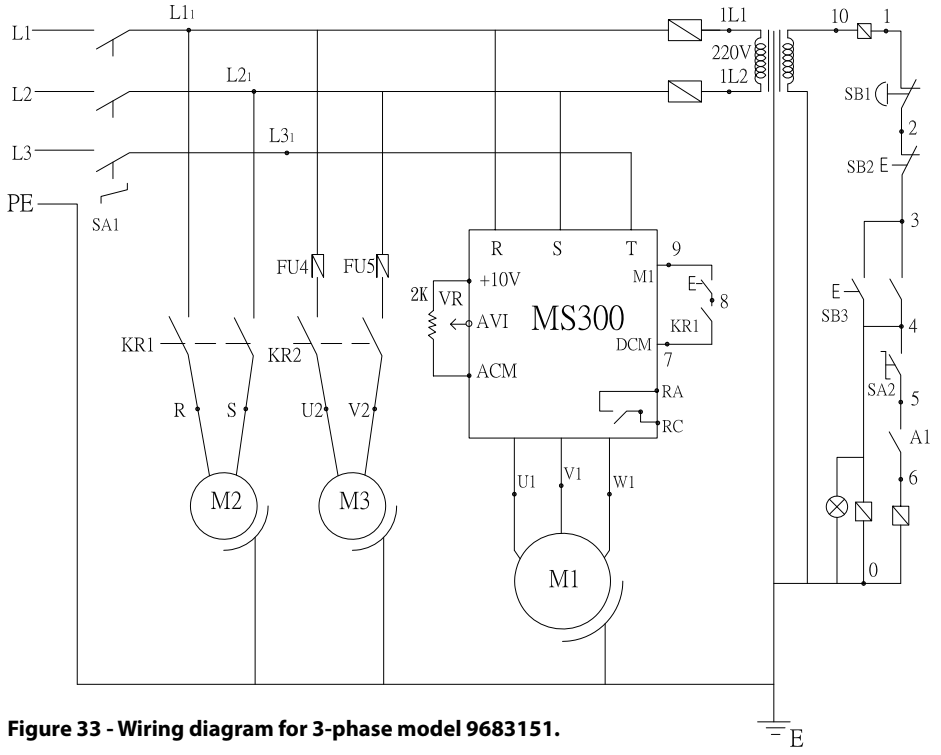


Figure 33 - Wiring diagram for 3-phase model 9683151.

WIRING DIAGRAM AND PARTS LIST (CONTINUED)

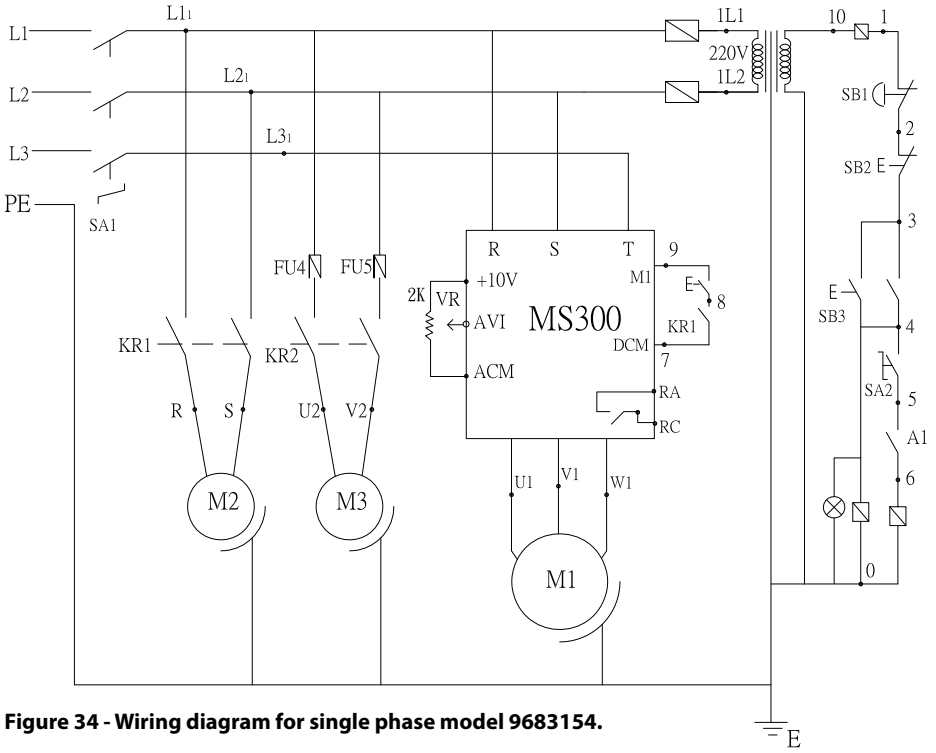
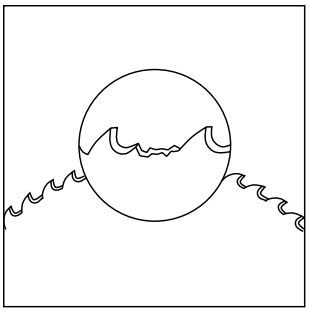
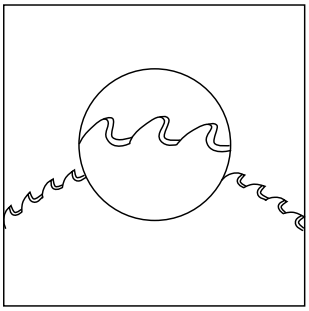
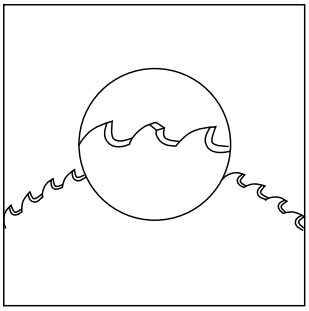


Figure 34 - Wiring diagram for single phase model 9683154.

Item Name	Description and Function	Technical Data	Qty.	Suppliers Reference	Remarks
F 1 F 2 F 3 F 4 F 5	Fuses	20x5mm 250V 0.5A 0.5A 0.5A 1A 1A	1 1 1 1 1	HTF-1	CUS
	Fuses base	250V 10A 10A 250V	5		
KR 1 KR 2	Relay	250VAC 5A	1 1	AC 24V BMY-5-4C-5 BMY-5-2C-5	CE CSA
A1	Variable speed AC motor driver	460V 4A 230V 7A 2.2KW	1	43MS300 23MS300	CE
TC	Transformer	35VA 230/24V, 400V/24V	1	# 57	
SB1	Emergency Stop	250V 6A	1	SKB2-BS542	CE CUS
SB2 SB3	Stop button Start button	250V 6A	1 1	24V NPB-22-F-1B NLB-22-F-G1A	CE CUS
SB4	Trigger switch	15A 1/2HP 125 250VAC 0.6A 125VDC 0.3A 250VDC	1	V-15-1A5	CE CUS
SA1	Main switch	16A440VAC	1	ZH-C316	CE
SA2	Pump switch	250V	1	NSS-22-S2-1A	CE CUS
VR	Adjust-speed switch	5KΩ Max.	1	RVT24YNM 20SB502	JIS
M1	Motor	400V, 230V/ (2.2kw) 3HP 3ph	1		
M2	Motor Fan (Ventilator)	220~240V 0.12 / 0.11A 380~400V 0.06 / 0.07A 415~460V 0.07 / 0.05A	1		
M3	Coolant pump	400V / 3ph, 230V/1PH (0.09kw) 1/8HP	1		

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Tooth breakage 	1. Cutting too fast.	1. Reduce cutting pressure and/or blade speed.
	2. Wrong cutting speed.	2. Match blade diameter and cutting speed to material being cut.
	3. Wrong tooth pitch.	3. Choose a suitable blade.
	4. Low quality disk.	4. Use quality saw blade.
	5. Vise grip is ineffective.	5. Check for play in vise.
	6. Previously broken tooth left in the cut.	6. Make the cut elsewhere.
	7. Cutting resumed on a groove made previously.	7. Make the cut elsewhere.
	8. Insufficient coolant.	8. Check coolant level in the tank. Increase the flow of coolant. Check and clear blockage of coolant hole and tubing.
	9. Incorrect coolant emulsion.	9. Use correct water to coolant ratio.
	10. Sticky accumulation of material on the blade.	10. Use correct water to coolant ratio and a quality blade.
Premature saw blade wear 	1. Incorrect blade break-in.	1. Choose a suitable blade.
	2. Wrong cutting speed.	2. Match blade diameter and cutting speed to material being cut.
	3. Unsuitable tooth profile.	3. Choose a suitable saw blade.
	4. Wrong tooth pitch.	4. Choose a suitable saw blade.
	5. Low quality saw blade.	5. Use a better-quality blade.
	6. Insufficient coolant.	6. Check coolant level in the tank. Increase the flow of coolant. Check and clear blockage of coolant hole and tubing.
Chipped saw blade 	1. Hardness, shape or flaws in the material.	1. Reduce cutting pressure and/or blade speed.
	2. Wrong cutting speed.	2. Match blade diameter and cutting speed to material being cut.
	3. Wrong tooth pitch.	3. Choose a suitable saw blade.
	4. Vibration	4. Check for play in vise.
	5. Incorrectly sharpened blade.	5. Replace blade.
	6. Low quality blade.	6. Use a better-quality blade
	7. Incorrect coolant emulsion.	7. Use correct water to coolant ratio.
Saw blade vibration	1. Wrong tooth pitch.	1. Choose a suitable blade.
	2. Unsuitable tooth profile.	2. Choose a suitable blade.
	3. Vise grip is ineffective.	3. Check for play in vise.
	4. Maximum cutting dimensions exceeded.	4. Do not exceed tool specifications.
	5. Blade diameter incorrect/too large.	5. Match saw blade to material cutting specs.

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Streaked cuts / Ridges on the cutting surface 	1. Blade diameter incorrect/too large.	1. Match saw blade to material cutting specs.
	2. Vise grip is ineffective.	2. Check for play in vise.
	3. Cutting too fast.	3. Reduce cutting pressure and/or blade speed.
	4. Saw blade teeth are worn.	4. Sharpen blade.
	5. Insufficient coolant.	5. Check coolant level in the tank. Increase the flow of coolant. Check and clear blockage of coolant hole and tubing.
	6. Toothing does not unload shavings well.	6. Choose a blade with larger tooth pitch.
Cuts not straight	1. Cutting too fast.	1. Reduce cutting pressure and/or blade speed.
	2. Vise grip is ineffective.	2. Check for play in vise.
	3. Blade angle is off.	3. Adjust mitering gauge.
	4. Poor quality blade.	4. Use quality blade.
	5. Dirty vise/vise jaws.	5. Clean vise jaws and contact surfaces.
Blade sticks in workpiece	1. Cutting too fast.	1. Reduce cutting pressure and/or blade speed.
	2. Insufficient cutting speed.	2. Increase blade speed using speed dial.
	3. Wrong tooth pitch.	3. Use correct saw blade.
	4. Sticky residue on saw blade.	4. Use correct water to coolant ratio.
	5. Insufficient coolant.	5. Check coolant level in the tank. Increase the flow of coolant. Check and clear blockage of coolant hole and tubing.

TROUBLESHOOTING THE INVERTER

Error Code	Display	Description
ocA		Over-current during accerleration
ocd		Over-current during deceleration
ocS		Over-current at stop
ocn		Over-current during steady operation
Root Cause	Corrective Action	
Overload	1. Check if the motor is overloaded. 2. Make sure the motor is not obstructed. 3. Reduce start impact by setting S-curve deceleration time (Pr.01-24–01-27).	
Motor restarts during coast to stop	Check if the motor is still running during the output of the AC motor drive, and set speed tracking during start-up (Pr.07-12)	
Acceleration time too short	Increase acceleration time (Pr.01-12–01-19)	
V/F-curve setting voltage too high	Reduce setting voltage of Pr.01-04, 01-06, 01-08, 01-38, 01-40, 01-42, 01-57, 01-59, 01-61, 01-66, 01-68, 01-70.	
Output current too large with rapid change	Replace the motor drive with higher power capacity.	
Over-setting of torque compensation gain	High setting of torque compensation gain (Pr.07-26) may cause over-excitation of the motor, bring over-current of motor drive output. The temperature of motor will be too high, or even trigger the drive protective action.	
Active the output electromagnetic contactor	Check whether the electromagnetic contactor switches on and off during operation	
Over-length connection cable betwen motor drive and motor	1. Reduce output cable length. 2. Replace the motor drive with higher power capacity. 3. Add output reactor.	

Error Code	Display	Description
ovA		Over-voltage during acceleration
ovd		Over-voltage during deceleration
ovn		Over-voltage during constant speed
ovS		Over-voltage at stop
Error Cause	Corrective Action	
Deceleration time too short	Check whether deceleration time (Pr.01-13) is too short.	
DC BUS over-voltage	Check whether the input voltage is over the motor drive input voltage range.	
Over-regenerative energy on the load	Evaluate whether add brake resistor or brake unit and check if it works normally	
Surges in the power system	Check if any power factor improvement product is used in the power system, and evaluate the necessity to add AC reactor.	
Ground fault occurs on the load	Check if there is any ground fault on the wiring of the load and the motor.	
External terminal application	While controlled by MI terminals, check if the cables are screwed.	
Motor restarts during coast to stop	1. Set speed tracking (Pr.07-12) if motor restarts during coast to stop with a high inertia load. 2. Postpone the time gap between each restart during coast to stop	
Acceleration time too short.	1. Increase acceleration time (Pr.01-12). 2. Reduce start impact by setting S-curve accel./decel. time (Pr.01-24–01-27).	
Motor shock	Adjust motor shock compensation factor (Pr.07-32).	
Application of electric generator	1. The rated value of electric generator should exceed double rated value of the AC motor drive.. 2. Adjust the auto voltage regulation of electric generator.	
Electromagnetic interference.	Check if control cable and power cable are fixed separately.	

TROUBLESHOOTING THE INVERTER

Error Code	Display	Description
LvA	LvA	Low-voltage during acceleration.
Lvd	Lvd	Low-voltage during deceleration.
Lvn	Lvn	Low-voltage at constant speed.
LvS	LvS	Low-voltage at stop.
Error Cause	Corrective Action	
Power shut down	Check if the power is temporary off.	
Abnormal power voltage	1. Check if the input voltage is within the allowable range of motor. 2. Check for possible phase loss or disequilibrium in 3-phrase input application. 3. Make sure the input electromagnetic contactor or relay is well functioned. 4. Make sure the capacity of input electromagnetic contactor or relay is enough.	
Insufficient power capacity	1. Check whether larger power is activated in the same power system. 2. Make sure the transformer capacity is enough.	
Load interference	Check for possible sudden load.	
Bad installation	1. Make sure the screws are locked well on the terminal. 2. For terminal DC+/+1 and +2/B1, make sure the jumper is installed and screwed. 3. Check whether the diameter of power cable is enough.	

Error Code	Display	Description
oL	oL	Over load
Error Cause	Corrective Action	
Overload	1. Check if the motor is overloaded. 2. Make sure the motor is not obstructed. 3. Reduce start impact by setting S-curve accel./decel. time (Pr.01-24–01-27).	
Improper setting of speed tracking	Check if the motor is still running during the output of the AC motor drive, and set speed tracking during start-up (Pr.07-12)	
Accel./Decel. time too short.	Increase accel./ decel. Time (Pr.01-12–01-19)	
V/F-curve setting voltage too high	1. Reduce setting value of Pr.01-04, 01-06, 01-08, 01-38, 01-40, 01-42, 01-57, 01-59, 01-61, 01-66, 01-68, 01-70 2. Setting of low-frequency voltage is too high	
Motor drive capaticy too small	Replace the motor drive with higher power capacity	
Over-setting of torque compensation gain	High setting of torque compensation gain (Pr.07-26) may cause overexcitation of the motor, bring over-current of motor drive output. The temperature of motor drive will be too high, or even trigger the drive protective action.	
Output phase loss	Check output motor wiring, whether screws are loosened, also the motor 3-phase impedance is equiled.	
Carrier frequency setting too large	Adjust carrier frequency (Pr.00-17)	

TROUBLESHOOTING THE INVERTER

Error Code	Display	Description
STL1	SrL1	STO1–SCM1 internal loop detection error
STo	Sro	Safety Torque Off function active
STL2	SrL2	STO2–SCM2 internal loop detection error
Error Cause	Corrective Action	
Wiring not installed or incorrect installed	1. Check whether the wiring of S1/S2 and +24V is correct installed. 2. Reset emergency switch (ON: activated) and re-power.	
Insufficient external power voltage	When using external power, make sure the input voltage remains 11V and above.	

Error Code	Display	Description
C_ _E	CodE	CANopen guarding error
Error Cause	Corrective Action	
Incorrect CANopen installation	1. Make sure the CANopen card is installed correctly. 2. Check whether the terminating resistor is correct. 3. Check whether the communication cable is normal.	
Incorrect CANopen parameter setting	1. Check whether CANopen communication address, communication speed and communication format is correct. 2. Refer to Chapter 15 for CANopen Overview on the manual.	
CANopen circuit interference	Check for possible interference.	

Error Code	Display	Description
PL_ _	PLFF	PLC operation function code error
Error Cause	Corrective Action	
Mis-active PLC program	If there is no PLC program in the control board, the display will show PLFF or PLor alarm when choosing function 2: PLC run or function 3: PLC stop on the KPC-CC01 digital keypad. In this case, choose function 1: Disable to clear the PLFF alarm.	
PLC source code error	1. PLFF, PLSn, PLEd, PLCr, PLdF, PLSF, Plod, PLFn. Check whether the source code has an error and download the program again. 2. Refer to Chapter16 for PLC Function Applications on the user manual.	
Excessive program capacity	1. PLor program is beyond the memory capacity or no program to download, restart power and download the program again. 2. Refer to Chapter16 for PLC Function. 3. Applications on the user manual.	
Data write memory error	1. PLSv, data write memory occurs error during program execution, restart power and download the program again. 2. Refer to Chapter16 for PLC Function Applications on the manual.	
Program transmission error	1. PLdA, program transmission error, please try uploading again. 2. Refer to Chapter16 for PLC Function Applications on the manual.	

NOTES

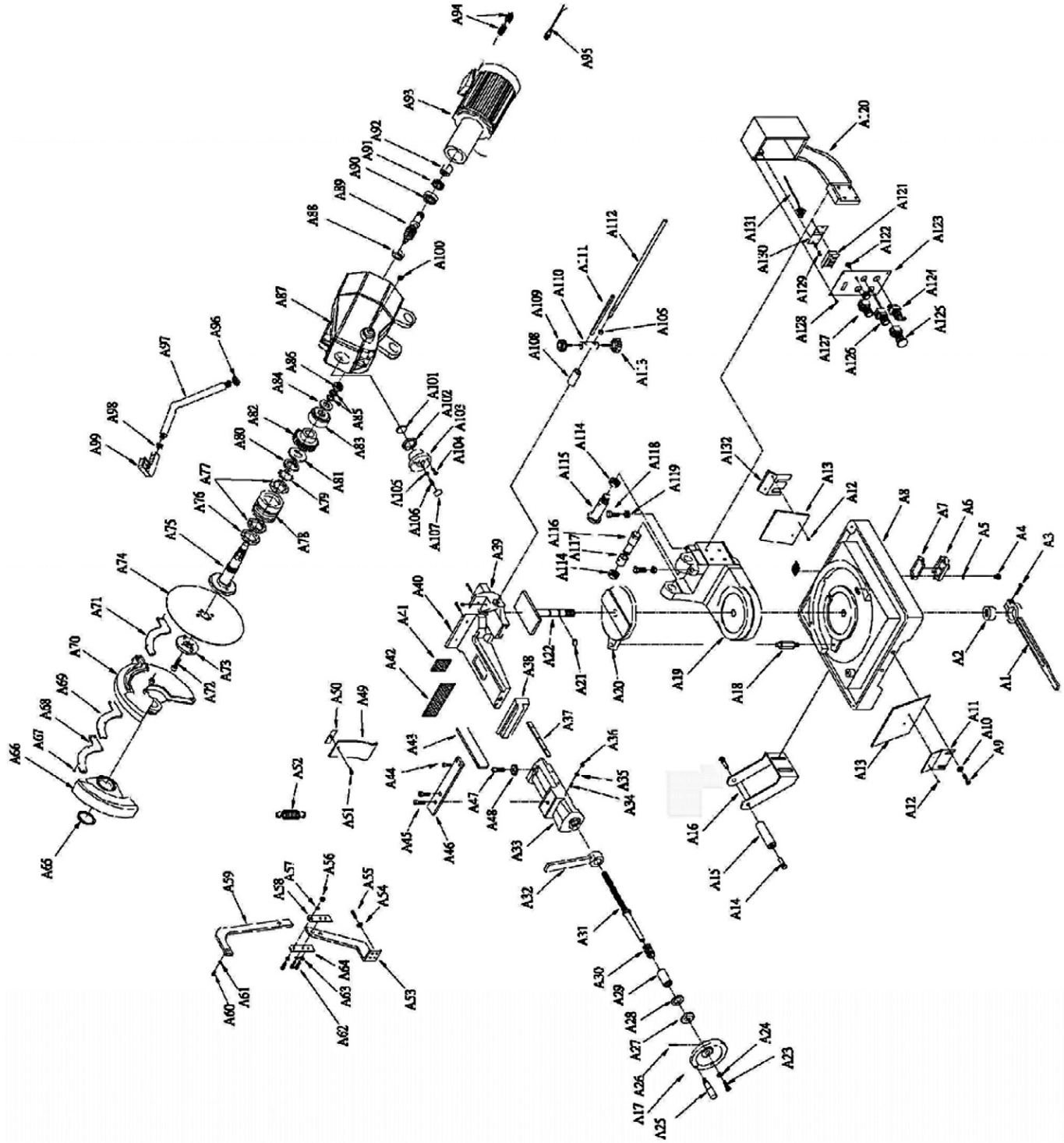


Figure 35 — Replacement Parts Illustration for 14" Variable Speed Cold Saw.

REPAIR PARTS LIST FOR 14" VARIABLE SPEED COLD SAW

Ref. No.	Description	Part No.	Qty.
A1	Lock handle	965183101	1
A2	Lock Nut	965183201	1
A3	Hex socket cap screw	*	1
A4	Hex socket cap screw M8×25	*	2
A5	Washer 5/16"	*	2
A6	Drainage	965183301	1
A7	Rubber	965183401	1
A8	Base	965183501	1
A9	Hex socket cap screw M8×16	*	2
A10	Washer 5/16"	*	2
A11	Support plate	965183601	1
A12	Screw	965183701	2
A13	Anti-spray plate	965183801	2
A14	Hex head screw	965183901	2
A15	Roller	965184001	1
A16	Roller bracket	965184101	1
A17	Handle wheel	965184201	1
A18	Support rod	965184301	1
A19	Swing arm(base)	965184401	1
A20	Slide base	965184501	1
A21	C-clip	965184601	1
A22	Center shaft	965184701	1
A23	Hex socket cap screw M8×20	*	1
A24	Washer M10	*	1
A25	Grip	965184801	1
A26	Set screw	965184901	1
A27	Bearing cover	965185001	1
A28	Bearing	965185101	1
A29	Bushing	965185201	1
A30	Sping	965185301	1
A31	Leading screw	965185401	1
A32	Lock handle	965185501	1
A33	Slide vise	965185601	1
A34	Set screw	965185701	3
A35	Washer	965185801	3
A36	Nut	965185901	3
A37	Gib	965186001	1
A38	Vise clamp	965186101	1
A39	Vise bench	965186201	1
A40	Hex socket cap screw M5×25	*	3
A41	Small grooved jaw	965186301	1
A42	Grooved jaw	965186401	1
A43	Stopper	965186501	1
A44	Hex socket cap screw M8×20	*	2
A45	Hex socket cap screw M8×25	*	2
A46	Plate (vise)	965186601	1
A47	Hex socket cap screw M8×25	*	1
A48	Washer	965186701	1
A49	Anti-dust plate	965186801	1
A50	Holder plate	965186901	1
A51	Screw	965187001	1
A52	Sping	965187101	1
A53	Lower switching plate	965187201	1
A54	Washer	965187301	2
A55	Hex socket cap screw	965187401	2
A56	Nut	965187501	1
A57	Washer	965187601	1
A58	Joint plate w/thread	965187701	1
A59	Swing handle	965187801	1
A60	Hex socket cap screw M6×12	*	1
A61	Washer 1/4"	*	1
A62	Hex socket cap screw M8×20	*	3
A63	Washer 5/16"	*	2
A64	Joint plate	965187901	1
A65	C-clip	965188001	1
A66	Blade shield	965188101	1
A67	Screw M5×10	*	7
A68	Plate (cover)	965188201	1
A69	Rubber	965188301	2
A70	Blade cover (casting)	965188401	1
A71	Plate (cover)	965188501	1
A72	Hex socket cap screw M12×35	*	1
A73	Fixing flange	965188601	1
A74	Saw blade (optional) 350mm	965188701	1
A75	Spindle shaft	965188801	1
A76	Oil seal 50.72.8.	965188901	1
A77	Taper roller 32008	965189001	2
A78	Spindle sleeve	965189101	1
A79	Star washer	965189201	1
A80	Locking nut	965189301	1
A81	Spacer	965189401	1
A82	Worm gear	965189501	1
A83	Bushing	965189601	1
A84	Plate, stopper	965189701	1
A85	Disc spring washer	965189801	2
A86	Locking nut	965189901	1
A87	Machine head	965190001	1
A88	Ball bearing 6301	*	1
A89	Worm shaft	965190101	1
A90	Ball bearing 5305	*	1
A91	Oil seal 25×52×10	965190201	1
A92	Coupling	965190301	1
A93	Motor 3HP	965190401	1
A94	Wire relief	965190501	2
A95	Control wire	965190601	1
A96	Nut M20	*	1
A97	Control handle rod	965190701	1
A98	Nut M16	*	1
A99	Handle with trigger switch	965190801	1
A100	Oil pilot	965190901	1
A101	Gasket	965191001	1
A102	Oil ring 5×55	965191101	2
A103	Casting plug	965191201	1
A104	Hex socket cap screw M6×20	*	3
A105	Nut M10	*	1
A106	Set screw M10×35	*	1
A107	Oil seal	965191301	1
A108	Bushing for lengh setting rod	965191401	1
A109	Lock bolt with knob 5×55	*	1
A110	Bracket, length setting	965191501	1
A111	Upper length setting rod	965191601	1
A112	Lower length setting rod	965191701	1
A113	Lock bolt with knob	965191801	1
A114	Locking nut	965191901	2
A115	Shaft (right)	965192001	1
A116	Shaft (left)	965192101	1
A117	Bushing	965192201	1
A118	Hex head screw	965192301	2
A119	Nut	965192401	2
A120	Control arm	965192501	1
A121	Digital display	965192601	1
A122	Speed control knob	965192701	1
A123	Control panel	965192801	1
A124	Pump selection switch	965192901	1
A125	Emergency switch	965193001	1
A126	Start button	965193101	1
A127	Stop button	965193201	1
A128	Screw	965193301	4
A129	Hex socket cap screw	965193401	2
A130	Support plate	965193501	1
A131	Transmission wire	965193601	1
A132	Support plate, rear	965193701	1

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

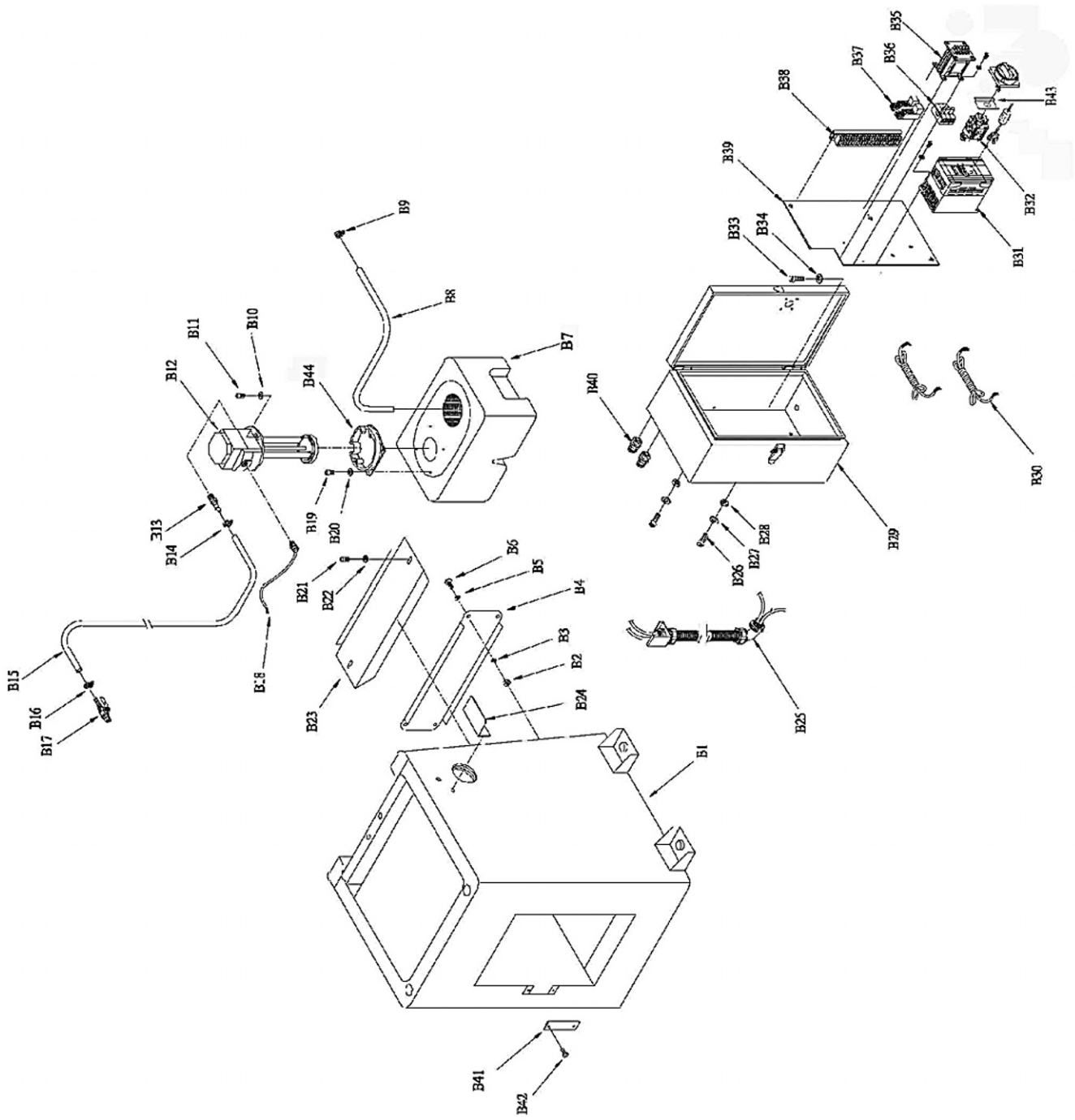


Figure 36 – Repair Parts Illustration for Stand.

REPAIR PARTS LIST FOR STNAD

Ref. No.	Description	Part No.	Qty.
B1	Stand	965193801	1
B2	Nut M6	*	4
B3	Washer 1/4"	*	4
B4	Suppot plate	965193901	1
B5	Washer 1/4"	*	4
B6	Hex cap screw M6×15	*	4
B7	Coolant tank	965194001	1
B8	Hose	965194101	1
B9	Hose clamp	965194201	1
B10	Washer 1/4"	*	2
B11	Hex socket cap screw M6×16	965194301	2
B12	Coolant pump	965194401	1
B13	Hose connector	965194501	1
B14	Hose clamp	965194601	1
B15	Hose 3/8"	965194701	1
B16	Hose clamp	965194801	1
B17	Valve	965194901	1
B18	Pump wire	965195001	1
B19	Hex cap screw M6×15	*	4
B20	Washer 1/4"	*	4
B21	Hex cap screw M6×15	*	2
B22	Washer 1/4"	*	2
B23	Suppot plate for tank	965195101	1
B24	Protector, plate	965195201	1
B25	Gooseneck tube	965195301	1
B26	Hex cap screw	965195401	4
B27	Washer	965195501	4
B28	Nut	965195601	4
B29	Electrical box	965195701	1
B30a	Power cord 3PH	965195801	1
B30b	Power cord 1PH	965197401	1
B31a	Inverter 3PH	965195901	1
B31a	Inverter 1PH	965197501	1
B32	Safety door switch	965196001	1
B33	Hex socket cap screw	965196101	2
B33	Washer	965196201	2
B35	Transformer	965196301	1
B36	Fuse and fuse base	965196401	1
B37	Relay	965196501	2
B38	Terminal plate	965196601	1
B39	Circuit board	965196701	1
B40	Wire relief	965196801	2
B41	Screw	965196901	2
B42	Plate, cover	965197001	1
B43	Plate, supporter	965197101	1
B44	Collar	965197201	1

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

NOTES

NOTES

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 is 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 elated to the use or inability to use our products. This warranty gives you specific legal rights which may vary from state to state.

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