

GENERAL POWER TOOL SAFETY WARNINGS



Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electric shock, fire, and/or serious injury.

Save all warnings and instructions for future use. The term “power tool” in these instructions refers to a mains-operated (corded) power tool or battery-operated (cordless) power tool.

Use the power tool, accessories, and tool bits in accordance with these instructions. Take into account working conditions and work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

Work Area Safety



Keep work area clean and well lit. Cluttered or dark areas invite accidents.

Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, and/or dust. Power tools create sparks that may ignite the dust or fumes.

Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control of the tool.

Electrical Safety



Power tool plugs must match the corresponding outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce the risk of electric shock.

Avoid body contact with grounded surfaces like refrigerators, pipes, and radiators when using electric powered tools; this will reduce the likelihood of shock if your body is grounded.

Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

Do not abuse the cord. Never use the cord for carrying, pulling, or unplugging the power tool. Keep the cord away from heat, oil, sharp edges, and/or moving parts. Damaged or entangled cords can increase the risk of electric shock.

When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.

If operating a power tool in a damp location is unavoidable, use a Residential Current Device (RCD) protected supply. Use of an RCD reduces the risk of electric shock.

Ensure your power supply agrees with the motor nameplate marking. Use alternating current (50-60 cycles) and 120 V. Voltage variation of more than 10% will cause loss of power and overheating.

Personal Safety

Stay alert, watch what you are doing, and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs,

alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.

Use personal protective equipment. Always wear eye protection. Protective equipment such as a dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.

Prevent unintentional starting. Ensure the switch is in the off-position before connecting to a power source and/or battery pack. Carrying tools with your finger on the switch or energizing power tools that have the switch on invites accidents.

Remove any adjusting key or wrench before turning the power tool on. A wrench or key left attached to a rotating part of the power tool may result in personal injury.

Do not overreach. Keep proper footing and balance at all times; this enables better control of the power tool in unexpected situations.

Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.

If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.

Power Tool Use and Care



Do not force the power tool. Use the correct power tool for your application. The correct power tool will complete the job better and safer at the rate for which it was designed.

Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.

Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive measures reduce the risk of starting the power tool accidentally.

Store idle power tools out of the reach of children, and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.

Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may impact the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.

Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

Maintain labels and name plates. These carry important information. If unreadable or missing, contact a *KETT Tool Company* representative.

Service



Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

SYMBOLS



SGS Certification for Canada and the United States



Double Insulated Motor

n₀ XXXX min⁻¹

N₀ Load RPM



Alternating Current



Volts

Amperes

SPECIFICATIONS

Amps	RPM	Power Source	Saw Unit
5	0-2500	120 V	KS-21
Cut Depth	Capabilities		
	Cold-Rolled Steel	Aluminum	
Adjustable up to 1/4 inch	18 Gauge	0.100 inch	

FUNCTIONAL DESCRIPTION



ASSEMBLY

WARNING To reduce the risk of injury, always unplug the power tool before attaching or removing accessories or adjusting. Use only specifically recommended accessories. Others may be hazardous.

Installing the Coupler (170-25) onto the Motor Unit (253-59) Spindle

Make sure that the Motor Unit (253-59) Spindle's specific spacer (154-47) is installed. Screw the Coupler (170-25) completely onto the spindle so that the Coupler rests against the spacer.

Installing the Saw Blade

Use the Spindle Wrench (149-6) to hold the flats of the Drill Spindle (139-10) behind the saw blade. Place the saw blade onto the shoulder of the Drill Spindle arbor and thread the Spindle Bolt (133-7) into the Drill Spindle with the associated hex key until tight.

Installing the Saw Unit (KS-21) onto the Motor Unit (253-59)

With the two Clamping Screws (M133-36 and M133-35) engaged into the Connecting Sleeve (567-1A) but loosened a few turns, slide the sleeve onto the Motor Unit (253-59) Adapter Ring. Insert the end of the Right-Angle Head Housing (151-2) with the exposed Drive Spindle (126-3) into the Connecting Sleeve. Rotate the Saw Unit (KS-21) as necessary to align the Coupler (170-25) on the Motor Unit Spindle with the Drive Spindle on the Saw Unit.

Once aligned, both the Motor Unit Adapter Ring and Right-Angle Head Housing will be fully inserted into each end of the sleeve. Tighten the two Clamping Screws in the sleeve to secure the Saw Unit in the desired orientation on the Motor Unit Adapter Ring.

OPERATION

WARNING To reduce the risk of injury, always unplug the power tool before attaching or removing accessories, or making adjustments. Use only specifically recommended accessories. Others may be hazardous.

To reduce the risk of injury, wear safety goggles or glasses with side shields.

Do not remove the saw guard. Before starting any cut, ensure that the saw guard is firmly in place.

NOTICE This power tool is not recommended for stainless steel or titanium. Exceeding the rated capacity can cause excessive blade wear and motor damage.

With only the front of the shoe resting on the material, place the tool at the material's edge. Ensure that the tool is held with the shoe flat and level with the surface of the material. The guard should be in its retracted position to expose the blade.

Point the tool in the direction of the cut, lining up the scribed line in vee sight on the saw guard. Squeeze the trigger switch and set the blade in motion. Slowly push the tool forward until the blade starts to cut, gradually increasing pressure until the blade is cutting at full depth. Increase pressure until the tool moves forward at a uniform rate.

NOTICE Never back up the tool inside the cut with the power on. This is the most frequent cause of broken blades and can result in serious tool damage.

To stop the cut, bring the saw to the ending point of the cut, hold firmly, and shut off power. Let the saw coast to a stop before lifting the saw from the cut.

ADJUSTMENT

WARNING To reduce the risk of injury, always unplug the power tool before attaching or removing accessories, or making adjustments. Use only specifically recommended accessories. Others may be hazardous.

If the saw guard seems to mar the surface of the material being cut, run the cut on the reverse side of the material. If the guard continues to mar, cover the section to be cut with pressure sensitive tape and then run the saw over and cut and through the tape.

DISASSEMBLY

⚠ WARNING To reduce the risk of injury, always unplug the power tool before attaching or removing accessories or adjusting. Use only specifically recommended accessories. Others may be hazardous.

Removing the Saw Unit (KS-21) from the Motor Unit (253-59)

Loosen the two Clamping Screws (M133-36 and M133-35) inside the Connecting Sleeve (567-1A) to pull the saw unit housing away from the Motor Unit (253-59) Adapter Ring. This will expose the Drive Spindle (126-3) of the Saw Unit (KS-21) and the Coupler (170-25) on the Motor Unit Spindle.

Removing the Saw Blade

Use the Spindle Wrench (149-6) to hold the flats of the Drill Spindle (139-10) behind the saw blade. Loosen the Spindle Bolt (133-7) out of the Drill Spindle. The saw blade should lift off the shoulder of the Drill Spindle's arbor and slide out the bottom of the Saw Body (156-8).

Removing the Coupler (170-25) from the Motor Unit (253-59) Spindle

⚠ Be cautious of sharp edges and wear gloves when removing the Coupler. If the Coupler is damaged, sharp edges may be present that could cause injury.

NOTICE The Coupler is designed to shear when the saw encounters an issue. This protects the internal components of the tool.

To remove the Coupler (170-25) from the Motor Unit (253-59) Spindle, loosen the coupler with the appropriate wrench using a swift motion. The resistance of the electric motor should hold the Motor Unit Spindle in place while the Coupler is being removed.

MAINTENANCE

⚠ WARNING To reduce the risk of injury, always unplug the power tool before performing any maintenance. Tool may be cleaned and lubricated by the user, but any other servicing (including the changing of carbon brushes) should be performed by the manufacturer or authorized representative.

NOTICE This power tool will stop when the brushes wear to a preset length. This prevents damage to the motor.

Motors are factory tested. If the saw does not operate, check the following: supply line for blown fuses and plug and receptacle for contact.

Cable/Cord

The cable/cord is the "life line" of your tool. Keep cable/cord clean by wiping it off occasionally. Keep cable/cord out of oils and greases. Coil cable/cord neatly when not in use, and avoid dragging it across sharp surfaces or using it as a handle to lift the tool.

When using the tool at a considerable distance from power source, an extension cable of adequate size must be used to prevent loss of power and overheating.

Extension Cord Length (feet)		
Up to 75	100	Up to 200
18-Gauge Wire	16-Gauge Wire	14-Gauge Wire

Lubrication

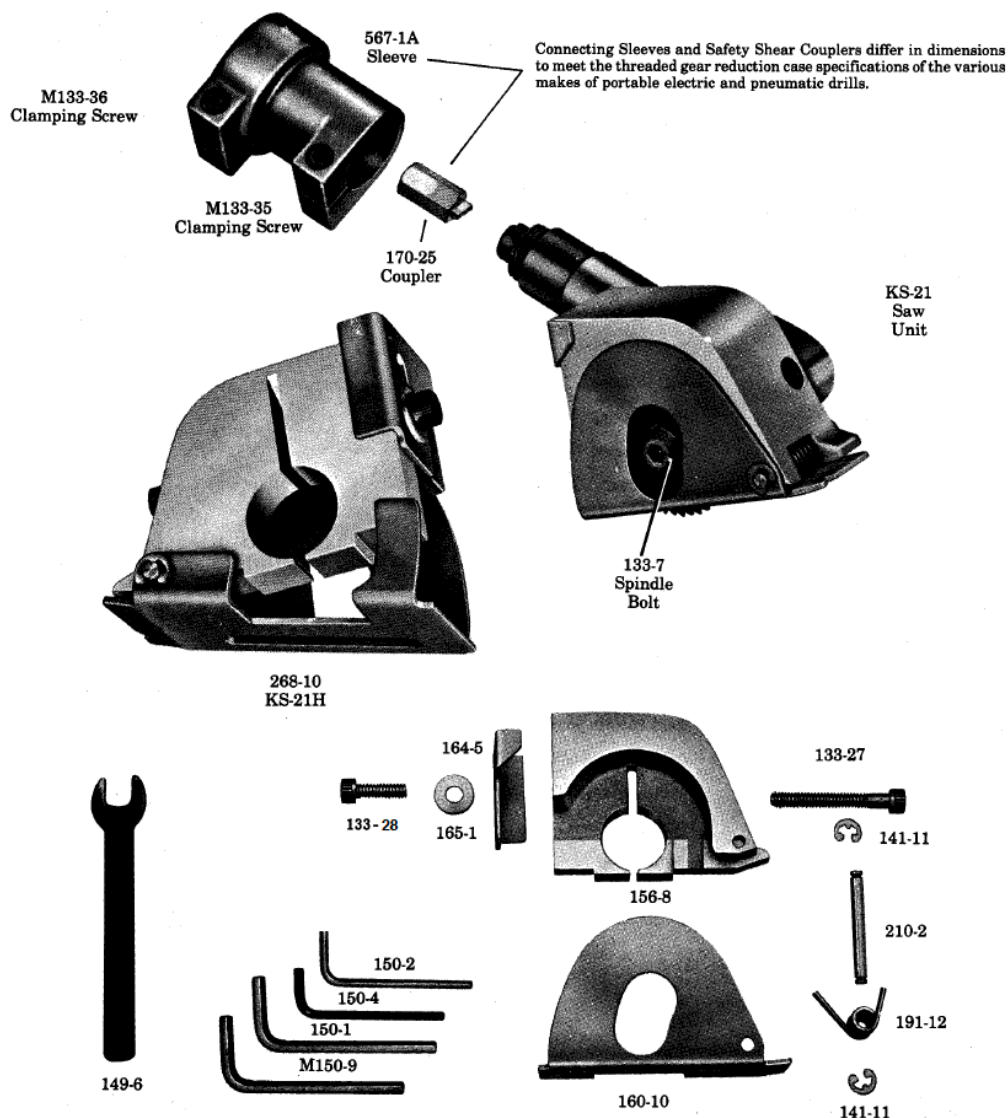
Once every three months, depending upon usage, remove the Saw Unit (KS-21) from the Motor Unit (253-59) following the instructions given under the heading "Disassembly."

The saw spindle and gears should be lubricated after every 25 to 30 hours of use. To lubricate, inject a light cup grease into the grease opening covered by the Screw Plug (181-2).

Tools that have seen continuous use should also have the gear train lubricated periodically, preferably at the same time the Saw Unit is serviced. To lubricate the gears, remove the Screws (Item 45 and 58) that hold the Gear Case (Item 24) to the motor shell. Remove the Gear Case from the Gear Case Cover (Item 28) and wipe out the old grease with a cloth. Wash the Gears and Spindles (Item 27 and 55) with kerosene or cleaning fluid. Refill the Gear Case ONLY 1/3 full with standard gear grease. Never fill the Gear Case more than 1/3 full.

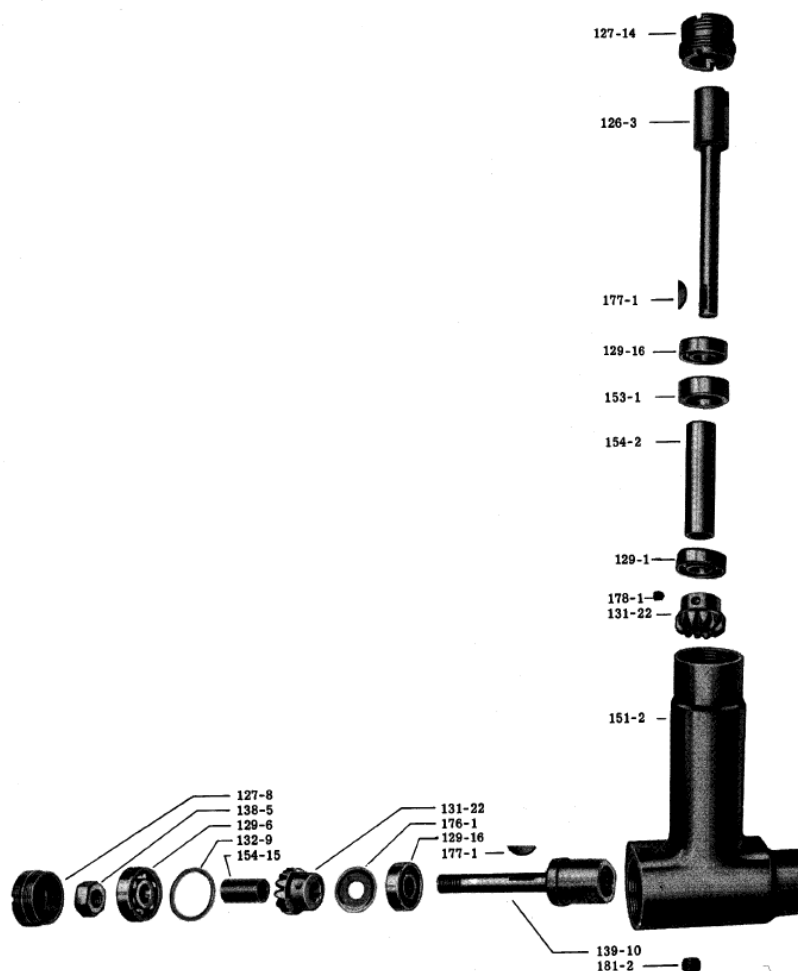
The Ball Bearing (Item 26) in the Gear Case is a closed type bearing and has been permanently lubricated at the factory to last the life of the bearing. This bearing should NEVER be immersed in a solvent or cleaning fluid.

SAW UNIT (KS-21) PARTS LIST



Part No.	Qty	Description	Part No.	Qty.	Description
M133-35	1	Clamping Screw	KS-21	1	Saw Unit
M133-36	1	Clamping Screw	156-8	1	Saw Body
133-7	1	Spindle Bolt	160-10	1	Saw Guard
133-28	1	Depth Stop Screw	164-5	1	Depth Stop
133-27	1	Clamping Screw	165-1	1	Spacer Washer
141-11	1	Retaining Ring	170-25	1	Safety Shear Coupler
149-6	1	Spindle Wrench	191-12	1	Coil Spring
150-1	1	3/16-inch Socket Key	210-2	1	Guard Pin
150-2	1	1/8-inch Socket Key	268-10	1	Guard Assembly
150-4	1	5/32-inch Socket Key	567-1A	1	Connecting Sleeve
M150-9	1	4-mm Socket Key			

HEAVY DUTY RIGHT ANGLE HEAD (KRA-2M) PARTS LIST



Part No.	Qty	Description	Part No.	Qty.	Description
126-3	1	Drive Spindle	139-10	1	Drill Spindle
127-14	1	Bearing Retaining Screw	151-2	1	Housing
127-8	1	Retaining Screw	153-1	1	Bearing Sleeve
129-1	1	Ball Bearing	154-2	1	Drive Spindle Spacer
129-6	1	Ball Bearing	154-15	1	Drill Spindle Spacer
129-16	1	Ball Bearing	176-1	1	Grease Slinger Washer
131-22	1	Mitre Gear	177-1	1	Woodruff Key
132-9	1	Shim Washer	178-1	1	Gear Set Screw
138-5	1	Hex Nut	181-2	1	Screw Plug

MOTOR UNIT (253-59) PARTS LIST

Item No.	Part No.	Qty.	Description	Item No.	Part No.	Qty.	Description
1	382299-01	1	Armature & Fan (6 teeth)	24*	388657-00	1	Gear Case
2	176883-00	1	Field	26*	330003-09	1	Ball Bearing
3	176846-02	2	Brush	27	388668-00	1	Spindle & Gear
5	176801-02	1	Left Brush Holder (grey)	28*	176650-00	1	Gear Case Cover
6	176800-02	1	Right Brush Holder (black)	29*	23813-00	1	Fiber Washer
7*	176830-39 621884-04	1	Switch	43	136086-02	4	Terminal
8*	330072-98	1	Cord & Plug (18-2SJ)	45*	330019-14	1	Screw
9*	176950-00	1	Ball Bearing	46	176655-00	1	Gasket
10*	176950-00	1	Ball Bearing	50*	93128-00	2	Needle Bearing
13	396969-09	1	Field Case	54*	93129-00	1	Needle Bearing
14	176899-02	1	Handle Cover	55	176731-00	1	Pinion & Gear (15/37 teeth)
15*	176829-00	1	Cord Clamp	56	176732-00	3	Thrust Washer
16	330005-01	1	Cord Protector	57	143079-00	1	Thrust Washer
17*	330019-13	3	Screw	58*	330019-16	2	Screw
18*	176951-00	2	Screw	61	136086-08	2	Terminal
19*	389824-00	1	Cup	62	176860-00	1	Lead
20	176811-01	1	Baffle	65	449892-00	1	Washer
21	949638-02	2	Rubber Plug	66	449368-00	1	Bearing Cap

***NOTES:**

- (Item 7) Use Switch (176830-39) for tools made before 11-25-2009 and Switch (621884-04) on tools made after 11-25-2009.
- (Item 8 and 15) Cord Clamp should be positioned so that 1-3/16 in (30 mm) of the Cord Jacket extends above the clamp.
- (Item 9) Seal to face commutator. Press to the tubing on the armature shaft.
- (Item 10) To remove from the shaft, place the bearing in a vise and crush outer race. Remove all internal bearing components so that the inner race is all that remains. Use the Small Bearing Separator (SRT320) to clamp the inner race and press off. Bearing presses to shoulder.
- (Item 17, 45, and 58) Torque to 18-23 in-lbs.
- (Item 18) Torque to 13 in-lbs.
- (Item 19) Small diameter end to face commutator. Lightly lubricate before installing into Field Case.
- (Item 26) Press bearing until seated completely in pocket. Rubber seal to face Spindle & Gear assembly.
- (Item 28) Comprised of Item 10 and 50.
- (Item 29) Press into Item 10.
- (Item 54) Press flush with surface facing Spindle & Gear assembly.

