

KAKA Industrial®

Specifications

Stock No.171001
 Effective Width.....305mm (12 inches)
 Maximum
 Shearing Thickness.....1mm (20 gauge)
 Bending Thickness.....1mm (20 gauge)
 Bending Angle.....90°
 Rolling thickness.....1mm (20 gauge)
 Roll Diameter.....39mm (1-1/2 inches)
 Packing dimensions.... 490x400x330mm
 (20x16x13 inches)
 Net weight.....43KGS (95 lbs.)



Unpacking

The SHEAR / BRAKE / ROLL 3-IN-1/12 is shipped from the manufacture in a carefully packed carton box. Thoroughly inspect the product upon opening the package. After unpacking the

unit, carefully inspect for any damage that may have occurred during transit.

If damage has occurred, shipping damage claims must be filed with the carrier and are the responsibility of the user.

Check for completeness. Immediately report missing parts to dealer.

Warning

The warnings, cautions and instructions discussed in this instructions or situations that could occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

SAVE THESE INSTRUCTIONS

Thank you for purchasing 12-inch Shear/Brake/Roll machine. Before attempting to operate your new tool please read these instructions thoroughly. You will need these instructions for the safety warnings, precautions, assembly, operation, maintenance procedures, parts list and diagrams. Keep your invoice

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number with these instructions. Write the invoice number on the inside of front cover. Keep the instructions and invoice in a safe, dry place for future reference.

SAFETY RULES

1. Know your machine. Read this manual carefully. Learn the machine's applications and limitations, as well as specific potential hazards peculiar to it.
2. Keep work area clean and well lit. Cluttered or dark work areas invite accidents.
3. Keep Children away. All children should be kept away from the work area. Never let a child handle a tool without strict adult supervision.
4. Do not operate this tool if under the influence of alcohol or drugs. Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not attempt to operate.
5. Use safety equipment. Eye protection should be worn always when operating this machine. Use ANSI approved safety glasses. Everyday eyeglasses only have impact resistant lenses. They are NOT safety glasses. Dust mask, non-skid safety shoes, hard hat, or hearing

protection should be used in appropriate conditions.

6. Wear proper apparel. Loose clothing, gloves, neckties, rings, bracelets, or other jewelry may present a potential hazard when operating this machine. Please keep all apparel clear of the machine.
7. Don't overreach. Keep proper footing and balance always when operating this product.
8. Check for damage. Check your tool regularly. If part of the tool is damaged it should be carefully inspected to make sure that it can perform its' intended function correctly. If in doubt, the part should be repaired. Refer all servicing to a qualified technician. Consult your dealer for advice.
9. Maintain tools with care. Keep tools sharp and clean. Properly maintained tools, with sharp cutting edges, are less likely to bind and are easier to control.
10. When you move, install, clean or adjust the machine, keep away from the shears.
11. Put down the protective cover when you don't use the sliding roll of the machine.
12. Keep your hands away from the die when you are working on it.

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Set-Up and Assembly

Floor Diagrams

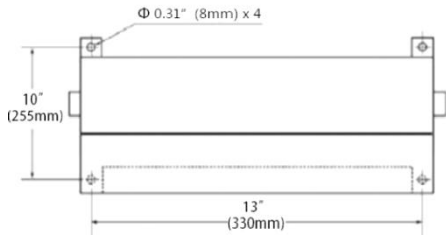


Figure 1 – hole centers for Shear, Brake and Roll

Assembly

Tools required for setup and assembly:

- 5, 6mm hex keys (“Allen wrenches”)
- 16mm open end wrench

1. Take out machine and spare parts from box.
2. Carefully clean all rust protected surfaces with a mild solvent or kerosene and a soft rag. Do not use lacquer thinner, paint thinner, or gasoline, as these may damage painted surfaces.
3. Coat all machined surfaces with a very light film of oil to inhibit rust.
4. Carefully move machine to a work bench or stand. Machine location must allow free access on all sides.

5. Bolt machine to stand or workbench. The stand or workbench must be bolted to the floor.

(NOTE: An optional stand is available for this machine; see Section 8. Contact KAKA distributor to order.)

6. Remove one handle (A, Figure 2) from each operating handle assembly, using 6mm hex key.

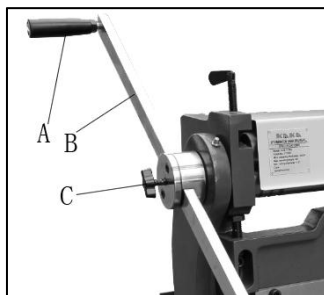


Figure 2

7. Loosen lock bolt (C, Figure 2).
8. Slide bar (B) into hub and tighten lock bolt (C) to secure.
9. Re-install handle (A).
10. Install both guide rods into either the upper or lower set of threaded holes (Figures 3 & 4) and tighten the setting by rotating hex nut against the cast base of the machine with 16mm wrench.
11. Install guide plate as shown in Figures 3 or 4. Secure it to rods using the T-handles.

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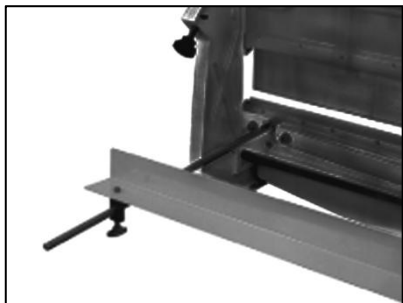


Figure 3 (Brake position)



Figure 4 (Shear position)

NOTE: For brake operation, install guide rods into upper set of holes (Figure 3); for shear operation, install in lower set of holes (Figure 4).

Press Brake set-up

Warning Do not bend material larger than 12" 20-gauge mild steel. Failure to comply may cause serious injury and/or damage to the machine.

To set up for bending:

1. Place a strip of wood (F, Figure 5) on bottom die, the full length of die.
2. Close brake until the wood contacts upper dies(E).
3. Loosen screws (D) using 5mm hex key.

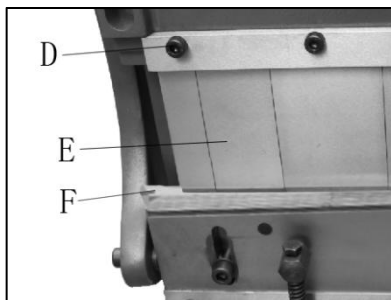


Figure 5

4. Select upper dies (E) for desired job and remove the others by sliding them out the left end. (Included die set sizes 1"x1, 2"x2, 3"x1, 4"x1)
5. Move operating handle until the wood pushes up the dies so that they seat uniformly in upper beam.
6. Securely re-tighten all screws (Figure 3), then release and remove wood strip.
7. If making repeated bends or using a long workpiece, position guide rods and plate for brake operation, as shown in Figure 3.
8. Scribe a line on workpiece for bend location. (Be sure to accommodate bend

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allowance based upon thickness of material. This can be done either through trial and error, or by consulting a machinist's handbook.)

9. Rest workpiece on v-block (lower die) so that the scribed line is aligned with the tips of upper die(s).
10. Hold workpiece steady and use operating handle to make bend.

To adjust brake beam (G, Figure 6) for 90° bends at bottom of stroke:

1. Slightly loosen locking screws (H) using 6mm hex key.
2. Turn brake beam adjusting screws (G) with 16mm wrench, until test bends reflect 90° bend at both ends of brake.
3. Re-tighten screws (H).

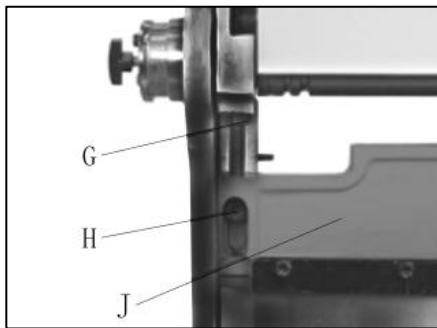


Figure 6

For special repetitive bends, the brake beam may be adjusted to over-bend the

desired angle since the metal will have some degree of “spring back”.

Shear set-up

Warning *Do not shear material larger than 12” 20 gauge mild steel. Failure to comply may cause serious injury and/or damage to the machine.*

1. Install guide rods and plate in shear position (Figure 4) and adjust to desired length of workpiece cut.
2. Place workpiece against guide block at right edge of table (K, Figure 7). The end of workpiece should be against guide plate.
3. Operate handle to begin shearing cut. Shearing action progresses from right to left.

NOTE: 1. To prevent distortion when notching, “snap” the handle to facilitate piercing.

2. Do not reach behind the machine to catch the cut-off piece. A large cut-off piece should be allowed to drop onto a special table designed to catch pieces that are bigger than the workbench.

3. Large pieces being cut may require a front table to support the piece.

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4. All metal cut on this machine will have a sharp edge. File or sand the sharp edge before handling to avoid injury.

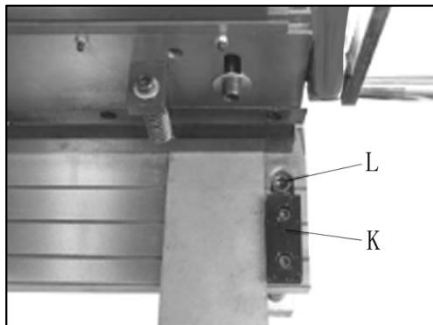


Figure 7

Lower Blade Adjustment

Upper and lower shear blades have been factory aligned and should not require immediate adjustment. Should re-alignment be needed in the future, proceed as follows:

1. Place a heavy sheet of paper in the cutting position, along entire length of bed, and make a cut.
2. If the shear does not cut the paper, loosen screw (L, Figure 7) at each end of table, with 6mm hex key.
3. Rotate adjustment screws (M, Figure 8) to shift table and change the gap between blades. **Do not allow the blades to overlap.**
4. If the shear cuts the paper on the ends, but not the center, slightly turn screw (N,

Figure 9) clockwise until paper is cut the entire length.

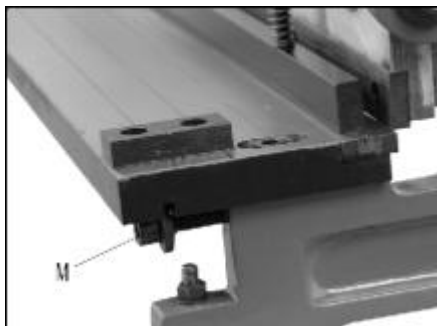


Figure 8

5. If the shear cuts the paper in the center, but not the ends, turn screw (N) counterclockwise until paper is cut the entire length.

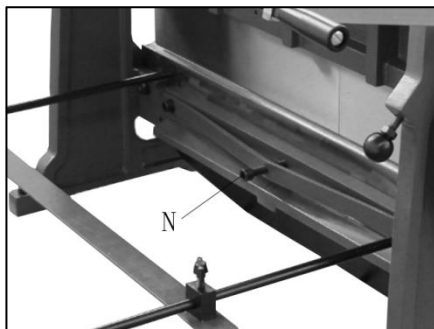


Figure 9

Blade Rotation/Replacement

Warning Exercise caution when working with or near the blades. Use work gloves when handling them.

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The shearing blades are reversible and interchangeable; when the edges dull, rotate them to the new edge, as follows:

1. Remove hold-down by loosening screws (O, Figure 10), using 10mm hex key.
2. Raise upper blade to highest position.
3. Remove 4 screws (P, Figure 10) and carefully remove blade.
4. Rotate or replace blade and re-install screws (P).
5. Re install hold-down. When blade is in highest position, the gap between the hold-down and the table should be within 1/4. Adjust to this position by turning the two screws (O, Figure 10) as needed. When the blade starts its downward travel, the hold-down should immediately hold workpiece in place.

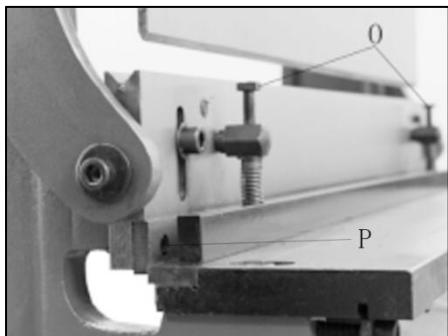


Figure 10

Slip Roll set-up

Warning Do not roll material larger than 12" 20-gauge mild steel. The slip roll guard must cover the rolls except when material is being fed into the rolls. Failure to comply may cause serious injury and/or damage to the machine.

Material Size Considerations

To determine approximate length of material needed for a desired size tube, use the following formula :

$$C = \pi D$$

Where C is the circumference, π equals 3.1417 and D is the diameter.

For example: To find the length of material needed (C) to form a tube 4" in diameter, multiply 3.1417 by 4". Result: 12.5667" is the circumference of approximate length of material needed. Cut several pieces of material to this length for a forming test run. Material may have to be lengthened or shortened depending upon results of test run.

TIP: If it doesn't interfere with the proposed final shape or design, a slight bend made with the press brake on the leading edge will simplify the initial rolling

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process, by allowing the leading edge to slip more easily over the idle roll.

Warning *Beware of pinch point – the intersection of upper and lower rolls. Failure to comply may cause serious injury to fingers and/or hands.*

1. Make sure rolls and workpiece are clean and free of debris to prevent pitting of sheet metal.
2. Back off idle roll completely by rotating idle roll screws (Q, Figure 11) counter-clockwise.
3. Loosen bolt (R, Figure 11) to increase space between upper and lower press rolls.

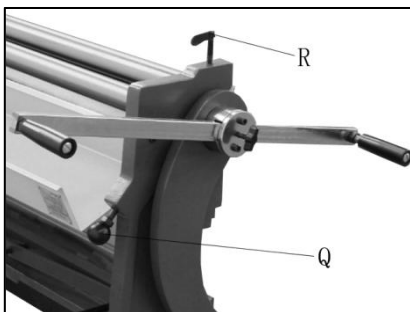


Figure 11

4. Insert material between upper and lower rolls, and tighten bolt (R, Figure 11) to lower the upper roll, until material fits snugly. The upper roll must have

sufficient pressure on work piece to feed properly.

5. Rotate both idle roll screws (Q, Figure 11) to adjust idle roll's proximity to the two main rollers. Raise both ends an equal amount.
6. Run workpiece through the machine using the handles. If workpiece is large, make sure it receives proper support as it exits the machine.
7. Make further passes of workpiece, raising the idle roll incrementally before each pass, until desired radius is achieved.

No exact formula can be followed when making roll adjustments because material "spring-back" varies with the kind of material being formed. Only by test forming several pieces can correct adjustments be obtained. Also, keep in mind that it is much easier to re-pass material to make a smaller radius than to attempt to increase a radius that was made too small.

The idle roll must be adjusted exactly parallel or the material will spiral during the rolling process. Measure each end of the opening with calipers if greater precision is required.

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Deliberately setting the rolls non-parallel can be used to make cone shapes.

To remove cylindrical shaped workpieces:

1. Loosen bolt (R, Figure 12)

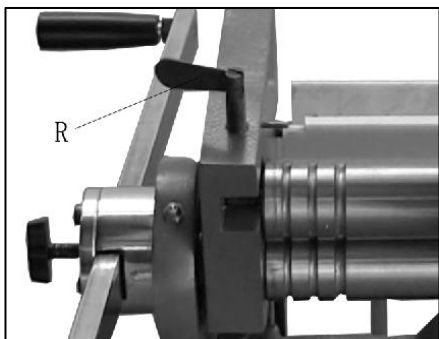


Figure 12

2. Carefully grasp upper roll and swing out the end.

⚠CAUTION *Grasp upper roll firmly, to prevent it falling out of machine.*

3. Slip workpiece off end of roll.
4. Re install upper roll, and tighten bolt (R, Figure 12).

Flat Rolling

Softer metals (copper, aluminum, etc.) can be processed through the slip roll machine to straighten, flatten, or reduce

their thickness. Simply adjust the upper press roll for thickness, lower idle roll all the way down, and feed workpiece through (Figure 13).

NOTE: The idle roll will not descend completely out of the path of the workpiece; thus, there may be a slight bend in the workpiece. By flipping the workpiece over and re-feeding it, this bend can be minimized.

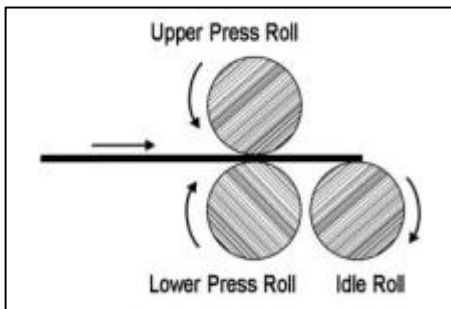


Figure 13

Forming a Radius

1. Adjust upper press roll as needed.
2. Insert workpiece from front.
3. Operate handle; when the material reaches the point where the radius is to begin (a, Figure 14), stop the machine and raise the idle roll an equal amount on each end to achieve desired bend.

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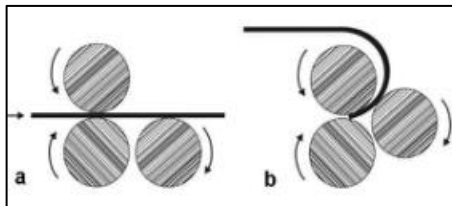


Figure 14

- Restart rolls and continue until bend is completed (b, Figure 14). Support workpiece as it exits machine.
- Make further passes if needed, along with incremental idle roll adjustments.

Forming a Tube

- Adjust upper press roll as needed for workpiece thickness.
- Feed workpiece into machine. As it nears the end (a, Figure 15), stop and reverse direction (b, Figure 15).
- Make further passes if needed, along with incremental idle roll adjustments.

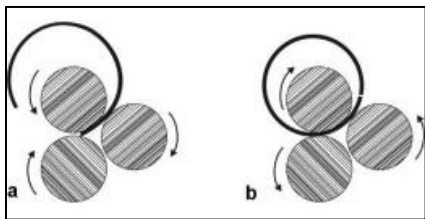


Figure 15

Bending Wire

There are 6 wire grooves at the ends of the press rollers to accommodate a 2.99mm(0.12"), 3.66mm(0.14"), 6.1mm(0.24"), 3.05mm(0.12"), 4.40mm(0.17"), 5.16mm(0.20") wire.

Use the smallest groove into which the wire will comfortably fit. Bend the wire using the same principles as described for forming a radius. To make a complete loop of wire, use the instructions for forming a tube.

Maintenance/Lubrication

Warning Use caution when doing maintenance work around the shear blades.

- Apply #2 lithium tube grease once a month to the grease nipples on both ends of frame (A, Figure 16).
- Keep the slip rolls clean and rust-free, and frequently apply a light coat of oil to them.
- Lightly brush multi-purpose grease onto the gears at the end of the rollers (B, Figure 16). Turn operating handle to distribute the grease.
- Keep other exposed areas clean and lightly coated with oil, such as the shear

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blades, table and upper dies. (Remove upper dies from bar for more effective cleaning).

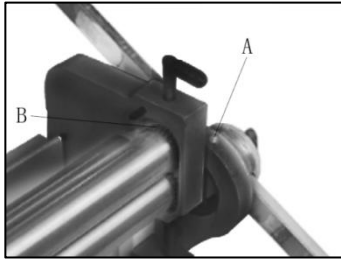


Figure 16

Tools Required (Not included)

- 5mm Hex Key
- 6mm Hex Key
- 10mm Wrench
- 13mm Wrench
- 16mm Wrench
- Medium Screw driver
- Feeler Gauge set
- Angle Gauge or Protractor

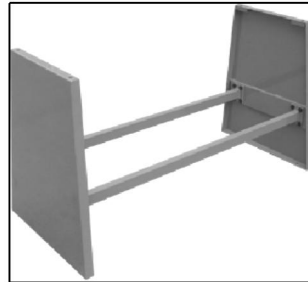
Optional Accessories

Part No. Description

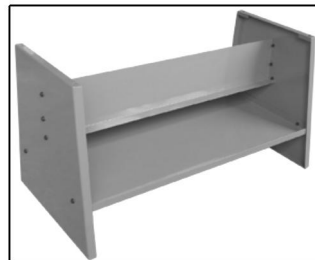
- | | |
|---|----------------|
| A | Optional Stand |
| B | Optional Stand |
| C | Optional Stand |



Stand type A



Stand type B



Stand type C

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Trouble	Probable Cause	Remedy
SHEAR		
Material won't cut.	Incorrect blade gap.	Adjust gap to accommodate thicker material.
	Machine capacity exceeded.	Use materials within capacity.
Cuts not square.	Unequal blade gap.	Make blade gap equal.
	Not contacting table guides.	Maintain consistent guides contact.
	Blade is bowed.	Remove bow.
	Insufficient hold-down pressure.	Adjust hold down.
Poor cut quality.	Dull blade(s).	Replace or sharpen.
	Incorrect blade gap.	Adjust gap as needed.
	Loose gibes.	Adjust backlash out of gibes.
BRAKE		
Workpiece not bending, or bending difficult.	Workpiece too thick.	Use materials within capacity.
	Improper bend allowance.	Adjust brake beam for proper bend size.
Bend radius not consistent across material.	Machine capacity exceeded.	Use materials within capacity.
	Brake beam improperly set for bending allowance.	Adjust brake beam for consistent bend.
SLIP ROLL		
Cones are made when trying to roll cylinders.	Rolls not parallel.	Adjust idle (rear) roll until parallel to upper press roll.
Workpiece not bending.	Machine capacity exceeded.	Use materials within capacity.
	Idle roll not engaging.	Inspect and make corrections as needed.

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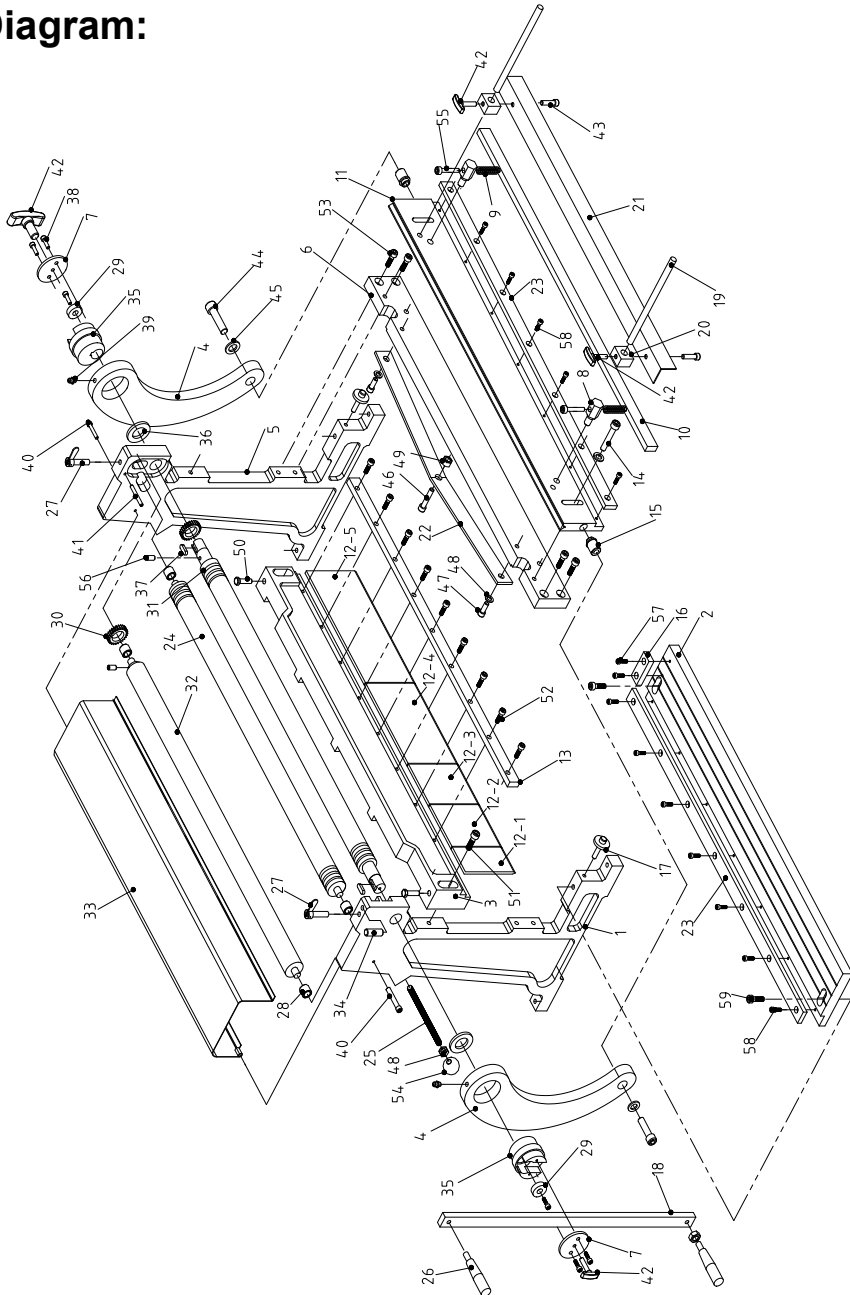
PARTS LIST

PART NO.	DESCRIPTION	Q'TY	PART NO.	DESCRIPTION	Q'TY
1	Left frame	1	19	Support rod	2
2	Work surface	1	20	Guide block	2
3	Cross beam	1	21	Backstop	1
4	Cranking arm	2	22	Adjustment bar	1
5	Right frame	1	23	Shears blade	2
6	Shear frame	1	24	Rear roll	1
7	Bushing cover	2	25	Screw	2
8	Press plate bracket	2	26	Handle	2
9	Spring	2	27	Positioning bolt	2
10	Press plate	1	28	Bushing	4
11	Lower braking die	1	29	Washer	2
12-1	1" Die	1	30	Gear	2
12-2	2" Die	1	31	Lower roll	1
12-3	2" Die	1	32	Upper roll	1
12-4	3" Die	1	33	Cover	1
12-5	4" Die	1	34	Eccentric shaft	1
13	Upper die bracket	1	35	Eccentric bushing	2
14	Bolt M8x50	2	36	Washer	2
15	Handle arm roll	2	37	Key 6x20	2
16	Guide block	1	38	Screw M6x16	6
17	Adjustment screw	2	39	Grease nipple	2
18	Handle arm	1	40	Bolt M6x35	2

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PART NO.	DESCRIPTION	Q'TY	PART NO.	DESCRIPTION	Q'TY
41	Taper pin	2	52	Screw M6X20	4
42	Handle	4	53	Screw M8X20	4
43	Screw M6x10	2	54	Knob	2
44	Screw M8x35	2	55	Bolt M6X45	2
45	Washer 8	2	56	Round pin	2
46	Bolt M10x40	1	57	Screw M6X10	2
47	Bolt M8x20	2	58	Screw M6X10	4
48	Washer 8	2	59	Screw M8X20	2
49	Nut M8	1	60	Stand type A (Optional)	1
50	Bolt M10X16	2	61	Stand type B (Optional)	1
51	Screw M8X25	2	62	Stand type C (Optional)	1

Diagram:



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If you have any questions about the use of this product, please contact the nearest one to you as below:

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