

# Operation Manual

## 360° Metal Sheet Bending Machine 61856



Illustration similar, may vary depending on model

Read and follow the operating instructions and safety information before using for the first time.

Technical changes reserved!

Due to further developments, illustrations, functioning steps, and technical data can differ insignificantly.

Updating the documentation

If you have suggestions for improvement or have found any irregularities, please contact us.



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## Introduction

Thank you for purchasing this quality product. **To minimise the risk of injury we urge that our clients take some basic safety precautions when using this device. Please read the operation instructions carefully and make sure you have understood its content.**

Keep these operation instructions safe.

## Safety instructions

- Check the delivery for completeness and intactness. Should pieces be missing or defective, the tool must not be used.
-   Always wear suitable protective equipment (protective gloves, work shoes, safety goggles, etc.). Normal spectacles are not protective goggles.
- Wear appropriate clothes. Do not wear loose clothing or jewellery, tie long hair together. Otherwise, they could get caught up in the rotating parts, which leads to injuries.
-  Wear non-slip shoes. Make sure to have a secure stance and always keep your balance.
- Keep your work area clean and provide sufficient lighting. Untidy or badly lit work areas increase the risk of accidents. Do not use the tool in wet or damp areas and do not expose it to rain.
- Keep children and by-standers away from your work area.
- Store tools that are not in use in a dry place to prevent rust from forming. Make sure that it is out of children's reach.
- Maintain tool with care. Make sure that tools stay sharp and tidy to obtain the best and the safest performance. Obey the instructions for lubricating the tools and replacing the accessories.
- Make sure that the handles are and stay dry, tidy, oil-free, and lubricant-free.
- Appropriately secure workpieces while working on them and make sure that you can control them during the entire process. Use clamps or a vice to secure a workpiece.
- Do not bend over too far. Make sure to always have a secure stand and to be able to keep your balance. Do not reach over or through an operating machine.
-  Keep all parts of your body away from rotating parts. **Risk of injuries!**
- Do not apply force on tools. It will do a better and safer work if used within the performance range that it is intended for.
- Use the right tool for your work. Do not use any tool or accessory for a work that it has not been designed for.
- Only use accessories recommended. Using inappropriate accessories increases the risk of injuries.
- Before each use, check the tool for damages. The protection devices and the accessories should be checked, too, to know if they work correctly and can be used as intended. Check the alignment of movable parts, find broken parts, check the assembly and all conditions that could impair the use. Protection devices or parts damaged should be repaired correctly or replaced.
- Do not use the tool if under the influence of alcohol, drugs, or medicine, that alter your consciousness.
- Never stand on the tool. Should the tool tilt over, serious injuries or damages might follow.



## Technical specifications

|   |                     |  |   |   |   |
|---|---------------------|--|---|---|---|
| <b>Material</b>   |                     | Cast iron  |   |   |   |
| <b>Max. bend strength</b> ( $\frac{1}{2}$ cm <sup>2</sup> ) |                     | 4.42 (28 $\frac{1}{2}$ $\frac{1}{2}$ in <sup>2</sup> ) |   |   |   |
| <b>Bend angle</b> (°)                                       |                     | 0–360  |   |   |   |
| <b>Weight</b> (kg)  |                     | 23   |   |   |   |
|   |                     | <b>Material of working piece</b>                       |   |   |   |
|   |                     | <b>Steel, iron</b>                                     | <b>Wrought iron</b>                               | <b>Brass, copper</b>                              | <b>Aluminium</b>                                  |
| <b>Max. capacities</b>                                      | <b>flat</b> (mm)    | 30×8<br>(1 $\frac{3}{16}$ "×5 $\frac{5}{16}$ " )       | 30×6<br>(1 $\frac{3}{16}$ "×1 $\frac{1}{4}$ " )   | 30×8<br>(1 $\frac{3}{16}$ "×5 $\frac{5}{16}$ " )  | 30×10<br>(1 $\frac{3}{16}$ "×3 $\frac{1}{32}$ " ) |
|   | <b>round</b> (mm)   | 16 (5 $\frac{5}{8}$ " )                                | 12 (1 $\frac{5}{32}$ " )                          | 16 (5 $\frac{5}{8}$ " )                           | 18 (2 $\frac{3}{32}$ " )                          |
|   | <b>squared</b> (mm) | 13×13<br>( $\frac{1}{2}$ "× $\frac{1}{2}$ " )          | 10×10<br>(1 $\frac{3}{32}$ "×1 $\frac{3}{32}$ " ) | 12×12<br>(1 $\frac{5}{32}$ "×1 $\frac{5}{32}$ " ) | 15×15<br>(1 $\frac{9}{32}$ "×1 $\frac{9}{32}$ " ) |

## Operation

### General

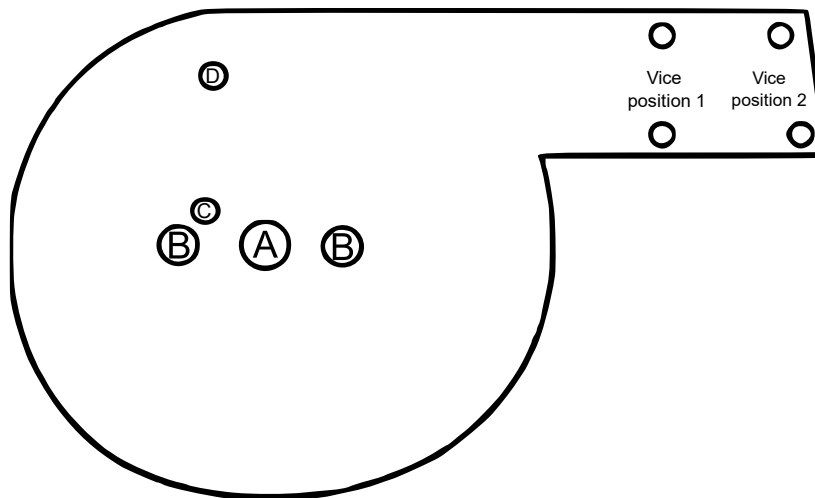
- Your tool is capable of many different types of bending operations. Materials that can be bent include steel, iron, brass, wrought iron, and aluminium.
- To determine how to properly set up the tool, you must first determine what type of bend you want to perform. Round shapes, angles, or spiral operations are each described in the following sections. The numbers in brackets refer to the reference number in the exploded view of the parts.
- Please note the “spring-back properties” of certain materials when performing the bending operations. This assumes that you overbend the material to a certain extent to achieve the desired degree of bending. Different materials have different degrees of spring-back. Perform a test bend to determine how much “spring-back” you need to compensate for.

**Note!** The bending machine must be fixed on a safe surface before being used.

### Bending round forms

1. Make sure that the mounting plate for dies (**4**) is attached to the mounting plate of spring-forming die (**32**) of the device. See Fig. 1 to know the positions required for bending round forms.
2. Make sure that the stop (**2**) is loose.
3. Move the vice unit (**5–9, 15**) on the mounting plate holder all the way to the end.
4. Screw the mounting shaft of round-bending die (**28**) on the mounting plate.
5. Set the round-bending die (**29**) on the mounting shaft.
6. Move the bending block assembly (**16, 17, 22–24**) to the very end. You might must loosen the bending block locking plate (**21**) by loosening the hexagon screws (**20**). Do not secure the locking plate at this moment.
7. Set the stop against the round-bending die and close the vice so that it clamps the workpiece against the die.
8. Move the bending block until it touches the workpiece and until its front plate (**16**) is flush with the vice surface (**8**). Secure the bending block by tightening the two screws.
9. Move the bending block to the left using the handle (**27**) until reaching the desired bending angle. Consider the “spring-back” effect.
10. Should you wish to repeat bends at the same angle, firmly tighten the stop at the spot where you have finished the bending operation.
11. Should you wish to form an entire 360° ring, make sure to clamp the end of your workpiece between the vice and die. Entirely bend your workpiece around and cut off the overspill.

12. To form springs, loosen the stop **(2)** and slightly lift the piece to be formed while bending it around the die. When beginning and finishing the spring, form an entire 360° ring as described in step 11.



**Figure 1:** Position of holes for fixing the dies. Darker holes have a thread.

| Nº       | Description  | Nº       | Description   |
|----------|--|----------|---|
| <b>A</b> | Insert the mounting shaft of round-bending die here. | <b>C</b> | Insert the die springs of angle-bending die here.   |
| <b>B</b> | Insert the hexagon screws here.                      | <b>D</b> | Insert the hexagon screw of angle-bending die here. |

### *Bending angles*

1. Make sure that the mounting plate for dies **(4)** is attached to the mounting plate of spring-forming die **(32)** of the device. See Fig. 1 to know the positions required for bending round forms.
2. Make sure that the stop **(2)** is loose.
3. Move the vice unit **(5–9, 15)** to the first position on the mounting plate arm.
4. Insert the spring pin **(19)** of the angle-bending die **(13)** into the little hole without thread of the mounting plate.
5. Attach the angle-bending die by screwing the hexagon screw **(18)** into the little threaded hole of the mounting plate.
6. Move the bending block unit **(16, 17, 22–24)** all the way back. You might must loosen the bending block locking plate **(21)** by loosening the two hexagon screws **(20)**. Do not secure the locking plate at this moment.
7. Set the stop against the angle-bending die and close the vice so that it clamps the workpiece against the die.
8. Move the bending block until it touches the workpiece and until its front plate **(16)** is flush with the vice surface **(8)**. Secure the bending block by tightening the two screws.
9. Move the bending block to the left using the handle **(27)** until reaching the desired bending angle. Consider the “spring-back” effect.
10. To repeat 90° angle bends, use the angle gauge assembly **(10–12)**. Screw the shaft of the angle gauge assembly **(11)** into the die. Slide the stop of the angle gauge assembly **(10)** onto the shaft to the desired position (depending on the length of your workpiece). Thus, the bending is “stopped” at the right position.
11. Should you wish to repeat bends at another angle, use the stop **(2)**.

### Bending springs

1. Remove the mounting plate for dies (4) by removing the two hexagon screws. Loosen the stop (2).
2. Pull the bending block unit (16, 17, 22–24) all the way back. Remove the front plate of the bending block (16) by unscrewing the corresponding hexagon screw (17). Thus, the swivel joint (22) of the bending blocks is exposed.

**For steps 3, 4 and 8 see Figure 2**

3. Attach the spring-forming mounting die (32) with two hexagon screws (in position 1).
4. Set the spring pin (25) of the spring-forming die "A" (31) in hole 3 and attach the long hexagon screw (26) in position 2.

**For steps 5 and 7 see Figure 3**

5. Set the piece to be bent into the hole of die "A" (31).
6. Move the bending block unit forward until it touches the workpiece, and secure it in that position.
7. Bend the workpiece until the piece to be formed has roughly reached the pin (see "P" on figure).
8. Now set the spring pins (25) of the spring-forming die "B" (30) into the holes 4 and 5.
9. Finish bending by completely bending the piece around the dies.

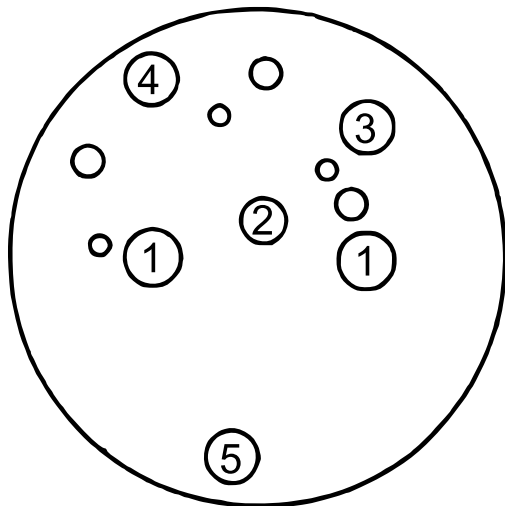


Figure 2

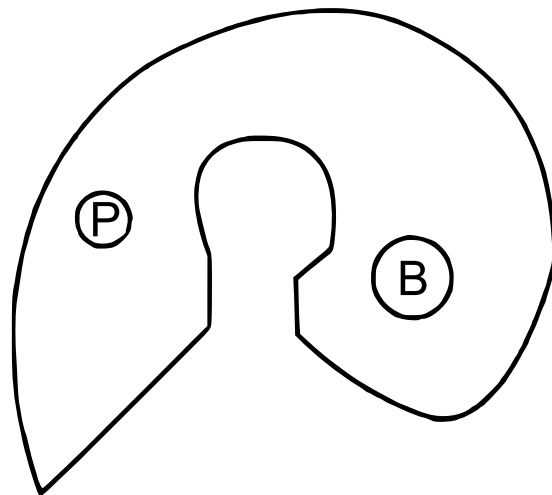
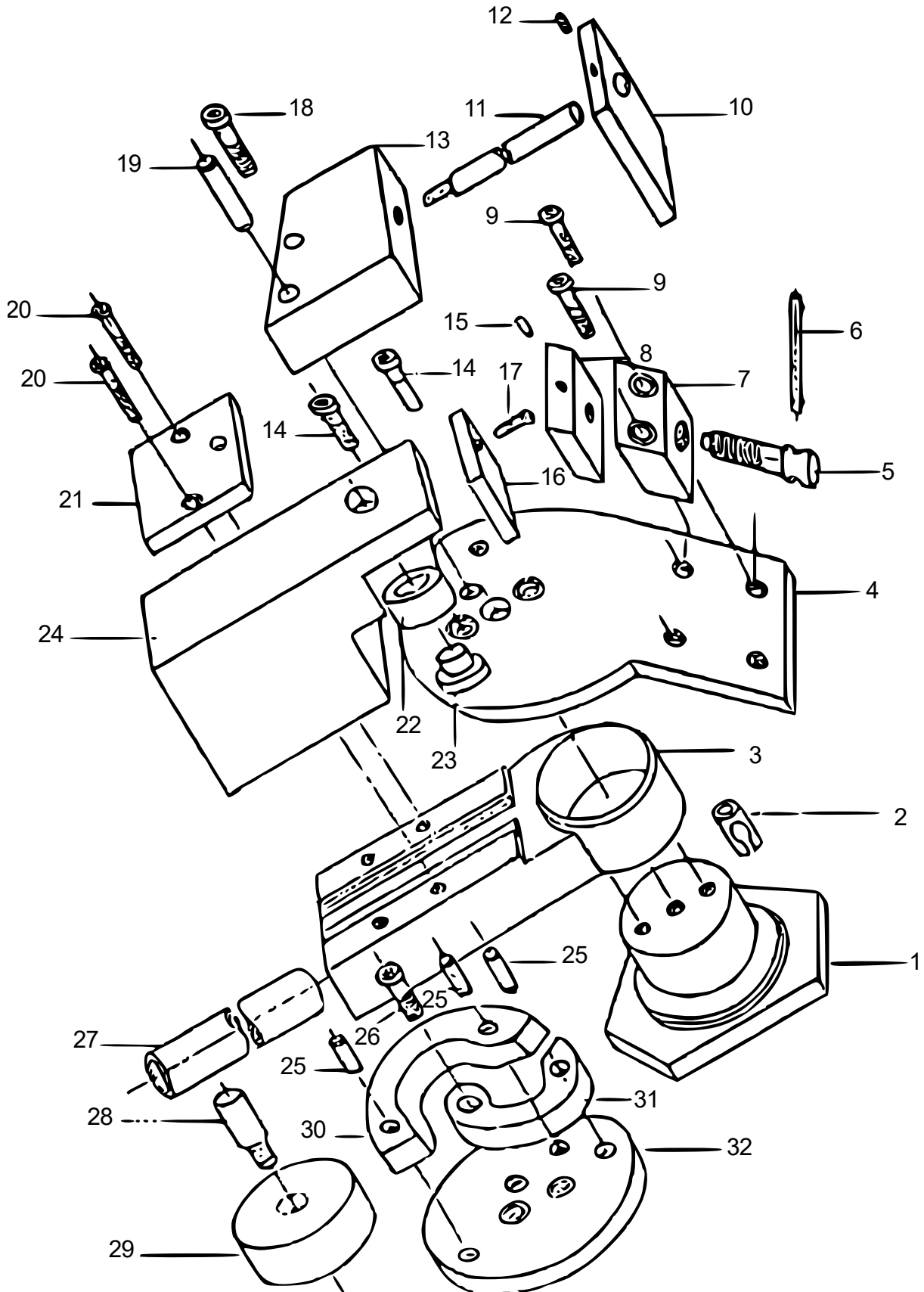


Figure 3

Exploded view and parts list





| <b>№</b>  | <b>Name</b>               | <b>Qty.</b> | <b>№</b>  | <b>Name</b>                          | <b>Qty.</b> |
|-----------|---------------------------|-------------|-----------|--------------------------------------|-------------|
| <b>1</b>  | Base                      | 1           | <b>17</b> | Hexagon screw                        | 1           |
| <b>2</b>  | Stop                      | 1           | <b>18</b> | Hexagon screw                        | 1           |
| <b>3</b>  | Body                      | 1           | <b>19</b> | Spring pin                           | 1           |
| <b>4</b>  | Mounting plate for dies   | 1           | <b>20</b> | Hexagon screw                        | 2           |
| <b>5</b>  | Vice drive screw          | 1           | <b>21</b> | Bending block locking plate          | 1           |
| <b>6</b>  | Vice handle               | 1           | <b>22</b> | Bending block swivel joint           | 1           |
| <b>7</b>  | Vice base                 | 1           | <b>23</b> | Bending block shaft                  | 1           |
| <b>8</b>  | Vice front                | 1           | <b>24</b> | Bending block                        | 1           |
| <b>9</b>  | Hexagon screw             | 2           | <b>25</b> | Spring pin                           | 3           |
| <b>10</b> | End stop of angle gauge   | 1           | <b>26</b> | Hexagon screw                        | 1           |
| <b>11</b> | Shaft of angle gauge      | 1           | <b>27</b> | Handle                               | 1           |
| <b>12</b> | Lock screw of angle gauge | 1           | <b>28</b> | Round-bending die shaft              | 1           |
| <b>13</b> | Angle bending die         | 1           | <b>29</b> | Round-bending die                    | 1           |
| <b>14</b> | Hexagon screw             | 2           | <b>30</b> | Spring-forming die "B"               | 1           |
| <b>15</b> | Locking screw             | 1           | <b>31</b> | Spring-forming die "A"               | 1           |
| <b>16</b> | Bending block front plate | 1           | <b>32</b> | Mounting disc for spring-forming die | 1           |

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