Operating instructions

Extending Machine

63028

Illustration similar, may vary depending on model

Read and follow the operating instructions and safety information prior to initial operation.

Technical changes reserved!
Illustrations, functional steps, and technical data may deviate insignificantly due to continuous further developments.

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 choosing to purchase this quality product. To minimise the risk of injury, we ask you to always take some basic safety precautions when using this product. Please read this operating manual carefully and make sure that you understand it.
Keep these operation instructions in a safe place.

Safety instructions

Warning!

- This user's manual contains important safety instructions for the correct installation, use, maintenance, and care of this device/tool. Keep this document and use it frequently for training other users.
- If you do not read, understand, and follow the instructions found in this manual, fire or serious injuries might be provoked – including the loss of extremities, electric shock, or death.
- Only the owner of this device/tool is responsible for its safe use. This responsibility includes, e.g., the correct installation within a safe environment, training of persons, permit of use, availability and comprehension of inspection and maintenance manuals, use of safety devices, cutting and grinding tools, and personal protection equipment.
- The society WilTec Wildanger Technik GmbH cannot be held responsible for any injuries or damages caused by negligence, incorrect training, modifications of the device, or wrong use.

General safety instructions for tools and devices

- Read and understand all instructions before using this tool/device.
- Only allow trained/supervised persons using this device. Untrained use bears an increased risk for the user to be injured or killed. If not in use, the device must be locked up to avoid unauthorised use – especially if children are near.
- Make your workshop childproof.
- Do not use the device in zones that are wet, untidy, or badly lit. Using a device or machine in these zones bears an increased risk of accident and injuries.
- For safely using a device or machine, the user needs to be able to fully concentrate. Never work if you are under the influence of drugs or alcohol, if you are tired, or distracted.
- Always wear suitable protective equipment, e.g., authorised protective goggles or a facial protection, during the use or maintenance of the device to avoid the danger of eye injuries or blindness caused by particles projected. Normal glasses are not authorised protective goggles!
- Wear appropriate clothing. Do not wear loose clothing or jewellery that could get caught in moving parts. Tie long hair together or cover it. Wear non-skid shoes to avoid skidding, which might cause a loss of control of the workpiece.
- Be aware of the dangers of dust connected to any workpiece material; always wear an authorised respiration mask to reduce the danger of respiratory issues.
- Only use the device according to the intended use and do not apply modifications that have not been authorised by the manufacturer. Modifying the device or using it in another way than it is intended to be used might cause dysfunctions or mechanical failures, leading possibly to serious injuries or even death.
- When using the device, make for a secure stand and mind your balance. Do not lean too far forward. Avoid any inconvenient hand posture that would provoke your losing control over the workpiece or being exposed to an increased risk of accident.
- Keep children and third persons at a safe distance from the work zone. Stop operation whenever they distract you.
- Protective devices and covers avoid any unintentional contact with moving parts or projected foreign bodies. Make sure that they have been installed correctly, are intact, and work properly.
- Do not apply too great a force when using the device. It will work with more safety and better performance if used within the range of speed that it has been designed for.
- Do not sit or stand on the device. Serious injuries might be caused by the device tilting or by the cutting mechanism being touched.

- Any uncontrolled movement during the operation of the device will increase the danger of injuries or loss of control of the device. Before starting the device, make sure that it is stable and that the movable base (if in use) has been secured.
- Only used recommended accessories. Using any inconvenient accessory will increase the risk of serious injuries.
- Maintain the device with care. Follow all maintenance instructions and lubrification programmes to keep the device in a good state of operability. Any incorrectly maintained device can lead to dysfunctions, possibly provoking serious injuries.
- Regularly check the device to find any condition that might impair the safety of operation. Immediately repair or replace any damaged or badly installed components before putting the device into operation.

Additional safety instructions for extending machines

- The user might easily cut his or her fingers or hands at the sharp edges of metal sheets. When handling sheets, always wear sturdy leather gloves. Always chamfer and deburr sharp edges of sheets before processing them with the extending machine.
- The angular momentum of the cylinders might draw in your fingers between the cylinders, which might lead to contusion. Always keep your hands away from the zone of influence of the cylinders when guiding the workpiece through the cylinders.
- The heavy cylinders or the frame falling might lead to contusion. Always make sure that the frame is firmly fixed to a vice that can well withstand the weight and work pressure. Make sure that the cylinders are correctly installed to the holders or supporting frame.
- In case you use the extending machine with damaged or too heavily used components, the device might fail, leading to injuries or bad results. Always check all components of the extending machine before beginning your work.
- This extending machine is exclusively meant to shape bends into sheet material such as steel or aluminium. Do not try to machine other materials (e.g., glass, ceramic, plastic); otherwise, the material or tool might break. Never modify this tool, never exceed its sheet-width capacity of 15 mm.
- Losing your balance while tracking might lead to concussion or cutting damages caused by the sheet. Make sure that your body is balanced and your feet are in a safe and stable position.

Warning!

As for any machine, this here bears potential dangers, too. Accidents are often caused by a lack of familiarity or attention. Always use this machine with care and attention to reduce the user's dangers of injuries. Ignoring normal safety precautions might lead to serious injuries.

The list of safety instructions is not exhaustive, as any workshop condition is different. Consider safety first, also regarding your individual work conditions. Use this machine and others with care and attention. Any non-compliance can lead to serious injuries, damages of the equipment, or bad work results.

Unpacking

- Your device has been packed carefully for transport. Remove the packing material around your device and check this.
- If you are completely satisfied by the state of your shipment, check the completeness of the delivery.
- **Warning! Danger of suffocation!** Keep children and pets away from plastic bags or packing material coming with this device. Remove them immediately.

Requirements for commissioning

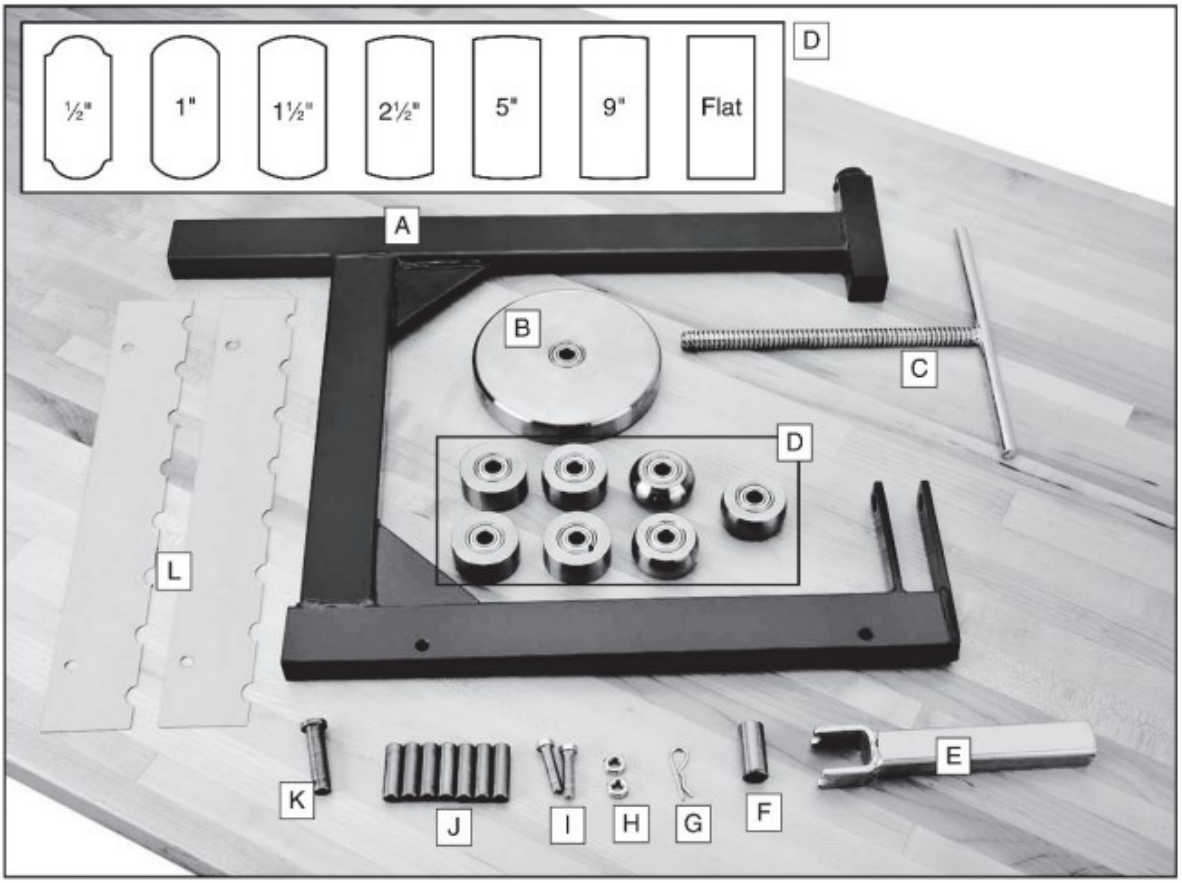
The following objects are not included in delivery, but are required for installation:

- a small hammer (1×)
- a 12-mm spanner or socket wrench (1×)
- a 14-mm spanner or socket wrench (1×)
- a stable work bench (1×)
- a vice fixed to the work bench (1×)

Scope of delivery

In the following, you will find a description of the main components coming with your device. Lay out these components to check them.

№	Name	Quantity
A	Frame	1
B	Upper cylinder	1
C	Lower adjustment screw of the lower cylinder	1
D	Lower cylinder • ½″ radius • 1″ radius • 1½″ radius • 2½″ radius • 5″ radius • 9″ radius • Flat	 1 1 1 1 1 1 1 1
E	Lower cylinder holder	1
F	Spacer-bar holder	1
G	Splint (⅜″ × 1⅞″)	1
H	Hexagon nuts (¼″ – 20)	2
I	Hexagon screws (¼″ – 20× ¼″)	2
J	Lower cylinder-axle bars	7
K	Clevis pin of upper cylinder	1
L	Cylinder holder	2



Note!
If you do not find a component listed, carefully check both the device and packing material. Some components might have been pre-installed for shipment or have been misplaced during unpacking.

Fixing to the work bench

The forces exerted during the operation of the extending machine are important. The machine needs to be firmly attached to a vice (see Fig. 3 as example) solidly fixed to a work bench or table and being able to withstand both the weight and dynamic pressure forming during operation.

Make sure that a work bench and vice is present for the extending machine before realising the installation instructions.

Note! Use pieces of cardboard or wood between the clamping jaws and the frame to avoid damages of the frame.

Fig. 3 – Example of fixation in a vice on a work bench

Attention!
Make sure that the work bench that the extending machine is attached to is stable and can bear the weight of the device, workpiece, and forces forming during operation.

Installation

1. Set in the spacer bar of the holder in the lower part of the lower cylinder holder, as shown in Fig. 4.

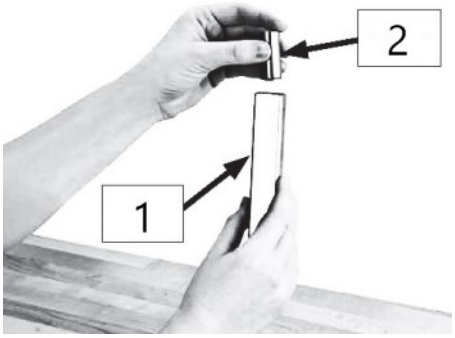


Fig. 4 – Setting in the spacer bar into the cylinder holder

№	Name	№	Name
1	Cylinder holder	2	Spacer bar

2. Put the frame upside down and set in the lower cylinder holder into the frame, as shown in Fig. 5.
   Note! If you set in the cylinder holder into the frame in the wrong direction, the spacer bar remains in the holder.

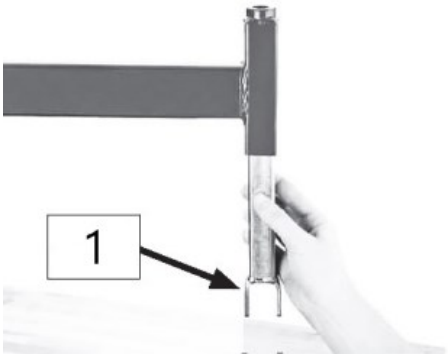


Fig. 5 – Setting in the cylinder holder into the frame

№	Name
1	Cylinder holder

3. Lay down the frame and screw the lower cylinder-adjustment screw nto the frame vis-à-vis the cylinder holder (see Fig. 6).

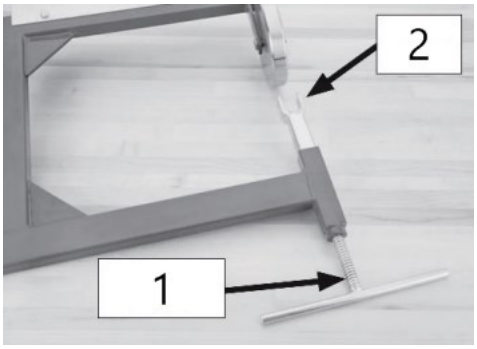


Fig. 6 – Installed lower cylinder-adjustment screw

№	Name	№	Name
1	Adjustment screw	2	Cylinder holder

4. Fix the unit into the vice, as described beforehand.
Note! Make sure that the handle of the adjustment screw has enough distance from the work bench to be able to turn completely (see Fig. 7).

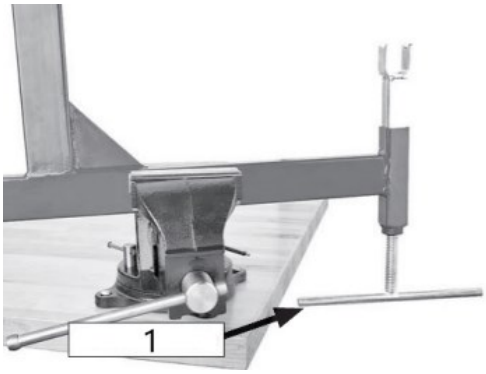


Fig. 7 – Enough clearance is required for the handle of the adjustment screw to turn completely

№	Name
1	Screw handle

5. Position the upper cylinder between the arms of the frame and put the upper clevis pin through the arm and cylinder, then secure the pin with the splint (Fig. 8).
Note! In case the splint cannot slide easily through the clevis hole, introduce it as far as possible, then pat it tight with a small hammer for the rest.

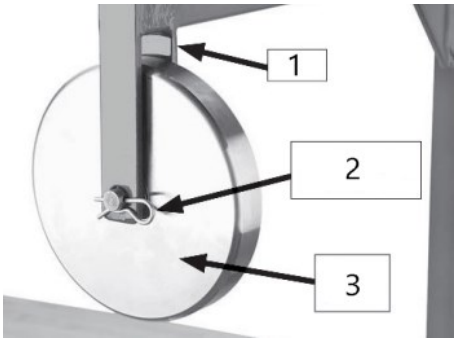


Fig. 8 – Installed upper cylinder

№	Name	№	Name
1	Frame arm	3	Upper cylinder
2	Splint and clevis pin		

6. Fix the lower cylinder holder to the upper side of the frame with 2× hexagon screws (¼″ – 20 × ¼″) and 2× hexagon nuts (¼″ – 20) (see Fig. 9).

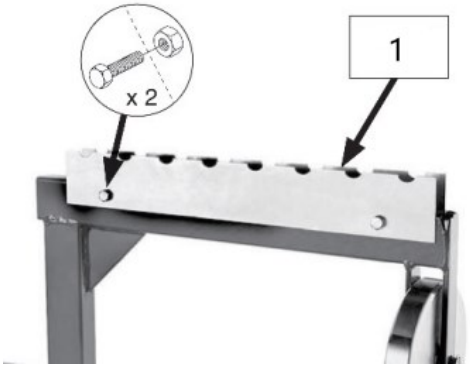


Fig. 9 – Installed cylinder holder

№	Name
1	Cylinder holder

7. Put a lower cylinder axle in every lower cylinder, then set the unit onto the cylinder holder (see Fig. 10).

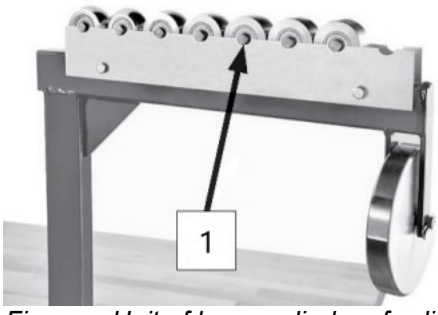


Fig. 10 – Unit of lower cylinder of cylinder holder

№	Name
1	Cylinder axle

Operation

Attention! Using the tool without an appropriate protective equipment might lead to injuries of the eyes, hands, and feet. Always wear protective goggles, leather gloves, and shoes with steel toe caps when using the device.

In case you are not familiar with this kind of machines, it is strongly recommended that you have you trained beyond this manual. Read books/professional journals or seek instruction from a third party before beginning a project.

Hints and advice

- Extending and curving metal should be done step by step. Begin with as much disk pressure as required for the workpiece not to jump out or slip out of the cylinders. After having shaped the first bend, slightly increase the pressure.
- Begin with the lower cylinder that has the smallest radius (peak), then increase the radius step by step until you obtain the desired bend.
- Practice with a residual piece having the same material and thickness as the workpiece to be machined.
- Leave a border of approx. 2.5 cm (1″) around the workpiece that does not go through the cylinders. As the centre of the workpiece extends, but not the border, the metal is bent.
- Take your time. Many passes through the cylinders with the pressure being gradually increased and the radiuses decreasing allows for good results and reduces the danger of damage of the surface of the workpiece.
- Overlap every pass with the previous in a regular back-and-forth movement through the cylinders. There are many ways of tracking, that lead to different results. Choosing the right track pattern for your operation depends on your research and experience.

Basic use

The individual results are legion when using an extending machine. Practice, read books/web pages, watch videos, and seek advice from experienced persons to acquire the knowledge and experience required to obtain good results.

The following method exemplifies a very simple procedure.

1. Make sure that the frame is firmly fixed in a vice that is stably attached on a work bench or table and that is able to withstand the weight and operational pressure.
2. Put on protective equipment.
3. Deburr the sharp edges of your workpiece.
4. Mark a border of approx. 2.5 cm (1″) around the workpiece.
5. Clean the cylinders to remove any grinding material, that might damage the surface of the workpiece or cylinders.
6. Install the lower cylinder with the smallest radius (peak).
7. Use the adjustment screw of the lower cylinder to lift this. Adjust it so that there is enough space to slide the workpiece between the cylinders.
8. Introduce the workpiece between the cylinders, then adjust the lower cylinder so that the pressure is just enough to avoid that the workpiece jumps out or slips out of the cylinders.
9. Move the workpiece back and forth in an overlapping pattern through the cylinders.
   Note! This example is one of many different tracking patterns.

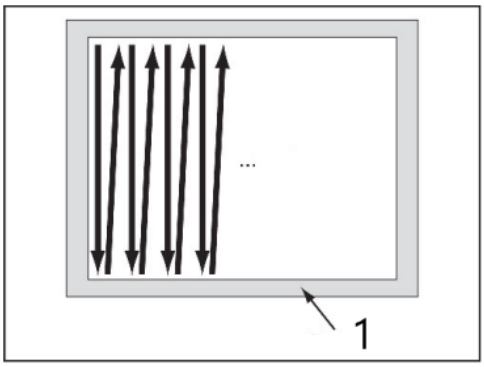


Fig. 11 – Example of a simple tracking pattern

№	Name
1	Frame

10. In case the workshop is not extended any more, turn the lower cylinder-adjustment screw clockwise to slightly increase the pressure.
11. When the maximum cylinder pressure is reached and the workpiece does no longer move through the cylinders, remove the lower cylinder and apply the one with the next radius.
12. Repeat steps 5–8 until the desired bend is reached.

Maintenance and care

To ensure the optimal performance of your device, stick to the maintenance programme and follow all specific instructions of this section.

Daily check:

- damaged cylinders
- damaged or cracked frame
- any other condition impairing safety

Daily maintenance:

- tightening and protecting cylinders

Cleaning and protecting

Clean all cylinder surfaces and axles bars with a clean cloth. Apply metal-protection agent and wipe of excesses so that a thin film remains.

Lubrication

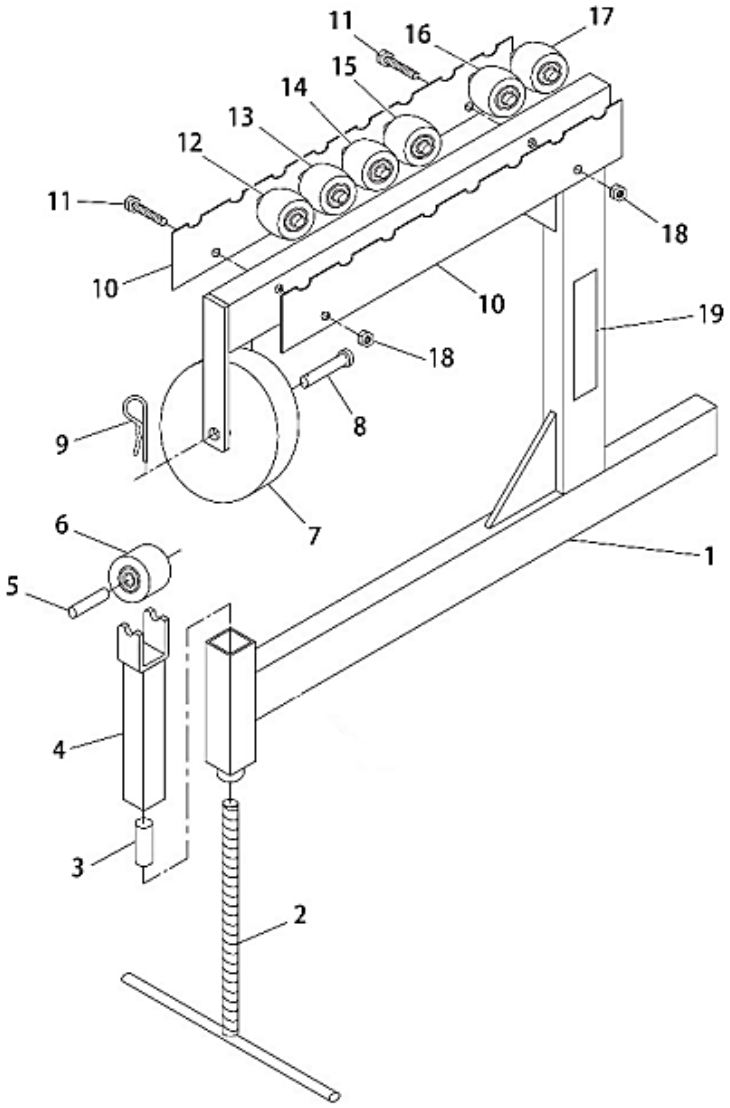
The cylinder bearings are lubricated at the factory and do not require additional lubrication. Leave them alone unless they need to be replaced.

Regularly remove the lower cylinder-adjustment screw and wipe the thread with a slightly oiled cloth.

Troubleshooting

Problem	Possible cause	Proposed solution
Surface of workpiece damaged or scratched	1. Too high cylinder pressure 2. Dirty cylinders	1. Reduce cylinder pressure. 2. Clean and protect all cylinder surfaces.
Workpiece does not move through cylinders without much effort	1. Too high cylinder pressure 2. Damaged cylinder bearing	1. Reduce cylinder pressure. 2. Replace bearing.
Bend of workpiece too high	Radius of lower cylinder too large	Use cylinder with smaller radius.
Bend of workpiece too small	Radius of lower cylinder too small	Begin with a lower cylinder of smallest radius, then increase the radiuses step by step until you reach the correct radius.
Bend of workpiece not to be shaped	1. Cylinder pressure too low 2. Lower cylinder with flat surface	1. Increase cylinder pressure step by step. 2. Use lower cylinder with radius.
Workpiece kinked	1. Wrong tracking pattern 2. Too high cylinder pressure	1. Use regular and smooth tracking pattern that overlaps with every back-and-forth movement. 2. Begin with the lowest possible pressure and increase the pressure step by step if no more bend forms.

Exploded view and parts list



№	Name	№	Name
1	Frame	11	Hexagon screws (¼″ – 20×¼″)
2	Lower cylinder-adjustment screw	12	Lower cylinder, ½″ radius
3	Spacer bar of holder	13	Lower cylinder, 1″ radius
4	Lower cylinder holder	14	Lower cylinder, 1½″ radius
5	Lower-cylinder axle	15	Lower cylinder, 2½″ radius
6	Flat lower cylinder	16	Lower cylinder, 5″ radius
7	Upper cylinder	17	Lower cylinder, 9″ radius
8	Captive pin of upper cylinder	18	Hexagon nuts (¼″ – 20)
9	Splint (⅜″ × 1⅞″)	19	Nameplate
10	Cylinder holder		