

Sharp-edged bends up to an angle of 90° can be made with the help of the quater mandrel.

The quater mandrel is fitted into the device instead of the standard mandrel. The flattened site of the quater mandrel shows towards the guide plate. The operations with the quater mandrel are similar to those with the standard mandrel. However please note that the thickness of the material must not exceed 3mm (referring to steel 37).

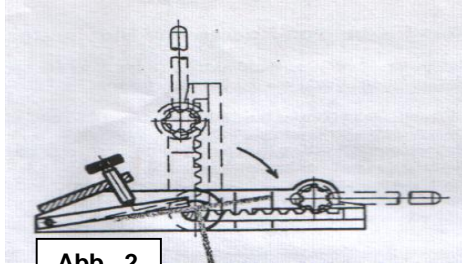


Abb. 2

3.3. Bending pipes and other round material

Bending pipes and other round material is possible up to a maximum of 10mm Ø.

The device should be prepared as follows:

- Turn the guide plate around so that both v-shaped furrows become visible. After that lock the guide plate into place again with the angle bolt.
- Place the rack into the body so that the gaps on the end show towards the standard mandrel.
- Attach the bending disk with the desired diameter of of your pipe onto the standard mandrel. Bending disks with diameters of 4, 6, 8 and 10mm belong to the set of supplied accessories of the %Universal+bending machine.

Please choose upper or lower gap in the rack appropriate to the thickness of the pipe for better grip. In addition keep in mind that bending pipes and other round material is only possible up to an angle of 180°. Bending round material (solid material) is not only possible with the bending disks but also with the standard or change-over mandrel.

4. Maintenance

Avoid any overstrain at all costs. Extending the handle lever to increase bending power is forbidden. Worn-out parts should be replaced immediately. Mobile parts should always be kept clean.

5. Technical data

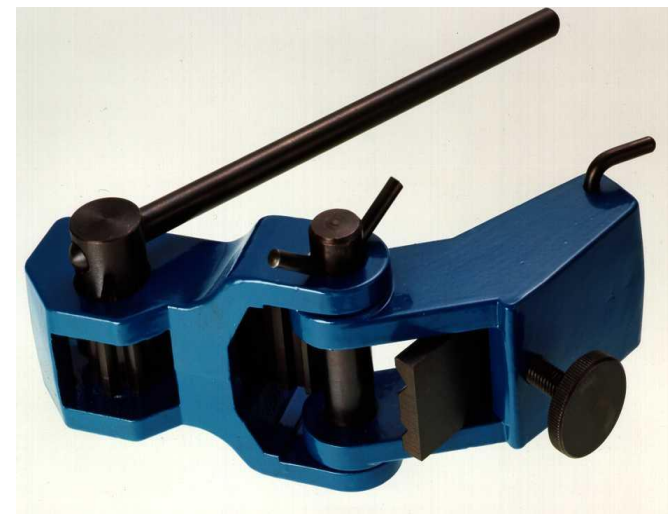
Bending performance :	flat material	up to 40 x 4mm
	pipes	up to 10mm Ø
	solid material	up to 10mm Ø
Weight :	4 kg	

Subject may change without notice in case of technical improvements.

Handyman's bending machine Universal

Art. No.: 110 010

Instruction Manual



1. General

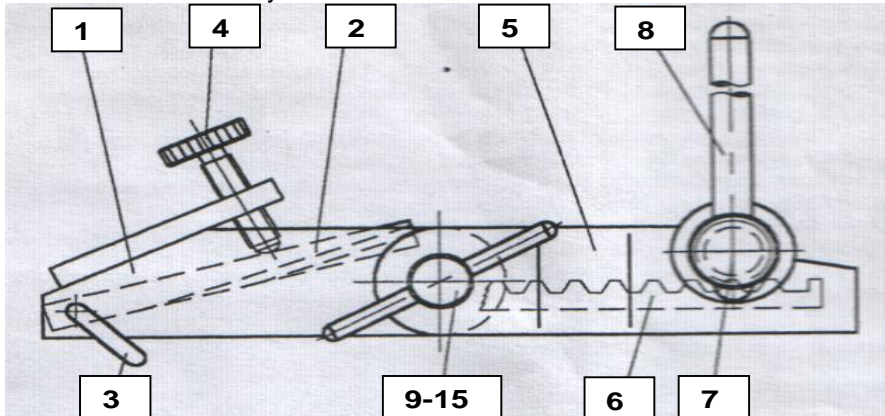
Universal is a versatile bending device developed for handymen, model makers, and also for the professional user. The device combines functions of bar angle bending devices, pipe bending devices and strip rolling devices. Remarkable features of Universal are quick readiness for use, good bending performance and little space requirements.

2. Assembly

Universal has been delivered with all attachments and accessories but in dismantled state. The device is easily assembled in less than 1 minute. First of all take body (1) and swivel arm (5) out of packing case. With the help of the vertical bar the body is firmly clamped in a vice so that the open side shows forwards. Push the cranked side of the swivel arm (5) over the body so that the 20mm drill-holes align exactly one on top of the other and the standard mandrel (9) is easily fitted into the drill-holes. The open side of the swivel arm (5) shows forwards as well.

Now the knurled head screw (4) that has already been assembled by the manufacturer is screwed outward thus far that the guide plate (2) fits between knurled head screw and standard mandrel, and can be locked in place by the angle bolt (3).

Bending flat material the smooth side of the guide plate (2) shows to the front. Fit the rack (6) in the guiding groove of the swivel arm. Bending flat material the bevelled cog rail at the face side of the rack (6) shows towards the standard mandrel (9) which has already been fitted in. Put the pinion (7) in the relevant drill-hole of the swivel arm (5). Assembly of Universal is completed and the device is ready for use.



- | | | |
|----------------------|--------------------|------------------------|
| 1 body | 6 rack | 11 change-over mandrel |
| 2 guide plate | 7 pinion | 12 flush bushing |
| 3 angle bolt | 8 hand lever | 13 handle |
| 4 knurled head screw | 9 standard mandrel | 14 headless screw |
| 5 swivel arm | 10 quater mandrel | 15 bending disc |

3. Bending of flat and sectional material

3.1. bending with the help of standard mandrel (9)

The device has to be assembled like previously described. Turn the swivel arm (5) to the back thus far that it forms a right angle to the guide plate (2). Place the material to be processed between guide plate (2) and standard mandrel (9). The material should be pushed forward so that the cogs of the rack (6) have grip on the material.

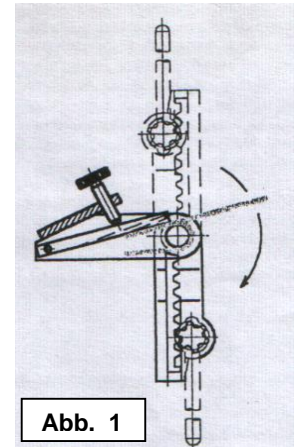
ATTENTION! Please follow the following instruction carefully!

The knurled head screw (4) has to be screwed in until the material is slightly pressed against the standard mandrel (9). Now the knurled head screw has to be unscrewed for 1½ -2 turns so that the material can smoothly glide along the guide plate (2).

The Device can be destroyed if you don't observe these instructions.

Pulling the hand lever (8) will cause the cogs of the rack (6) to press against the material. After that the whole swivel arm is pulled to the front and the material is being bent around the mandrel into the desired angle.

Afterwards you can take the material out of the device. Keep in mind that in cases where the angle exceeds 180° the mandrel has to be removed before you can remove the material.



3.2. bending with change-over mandrel (11) and quater mandrel (10)

Bending procedures at a narrow angle can be done with the change-over mandrels Ø 8 mm, 10 mm, 12 mm and 14 mm which are part of the scope of delivery. For that the device has to be assembled according to instructions in point 2. However instead of the standard mandrel the change-over mandrel is inserted which has to be prepared as follows. The change-over mandrel with the desired radius has to be inserted with the 8mm cylindrical pin into the handle and locked with the grub screw. The mandrel has to be positioned so that the indentation at the bearing pin of the mandrel and the grub screw are on top of each other.

The prepared mandrel is now inserted from the top into the 20mm drill-holes situated in the body and the swivel arm. The flush bushing is being inserted as a counter bearing from below and screwed together with the M8 thread pin of the mandrel. The device is now operational.

All following operations should be done like stated under point 3.1.