

# Hydraulic Pipe Bending Machine

## USER'S MANUAL



**WARNING:** Read carefully and understand all **INSTRUCTIONS** before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

**Item# HHW-2, HHW-3, HHW-4**

Thank you very much for choosing this Product! For future reference, please complete the user's record below:

Model: \_\_\_\_\_ Purchase Date: \_\_\_\_\_

Save the receipt, warranty and these instructions. It is important that you read the entire manual to become familiar with this product before you begin using it.

This machine is designed for certain applications only. We cannot be responsible for issues arising from modification. We strongly recommend this machine is not modified and/or used for any application other than that for which it was designed. If you have any questions relative to a particular application, DO NOT use the machine until you have first contacted The Seller to determine if it can or should be performed on the product.

## Intended Use:

The Hydraulic Pipe Bender is designed for bending thick-walled pipes (black iron, schedule 40 & 80, etc.). There are six different bending dies ranging from 1/2" to 2" for Item# HHW-2, eight different bending dies ranging from 1/2" to 3" for HHW-3 and nine different bending dies ranging from 1/2" to 4" for HHW-4. The Hydraulic Pipe Bender is not designed for bending thin-walled pipes

## TECHNICAL SPECIFICATIONS

Model (Item#)			HHW-2	HHW-3	HHW-4
Bending Dies	Inch		1/2"-2"	1/2"-3"	1/2"-4"
Max. load	Ton		9	15	15
Max. working stroke	MM		250	290	370
Bent pipe	O.D	MM	Ø21.5~60	Ø21.5~88.5	Ø21.5~108
	Thickness	MM	2.75~4.5	2.75~4.5	2.75~4.5
Bending angle	Degree		90° ~180°	90° ~180°	90° ~180°
Oil grade	#		N15	N15	N15

	HHW-2		HHW-3		HHW-4	
Pipe Size	Schedule 40	Schedule 80	Schedule 40	Schedule 80	Schedule 40	Schedule 80
1/2"	YES	YES	YES	YES	YES	YES
3/4 "	YES	YES	YES	YES	YES	YES
1 "	YES	YES	YES	YES	YES	YES
1-1/4 "	YES	NO	YES	NO	YES	NO
1-1/2 "	YES	NO	YES	NO	YES	NO
2"	YES	NO	YES	NO	YES	NO
2-1/2"	N/A	N/A	YES	NO	YES	NO
3"	N/A	N/A	YES	NO	YES	NO
4"	N/A	N/A	N/A	N/A	YES	NO

## GENERAL SAFETY RULES



**WARNING:** Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.



**WARNING:** The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions 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.

## Assembly

No special set up is required and little space is needed to operate the bending machine.

- 1- Assembly of the lower plate: First turn over the cylinder and remove the four hex bolts on the base of the cylinder. Align the four holes of the lower plate with the holes of the cylinder base, and affix with the hex bolts taken from the cylinder base.
- 2- Assembly of the upper plate: When the lower plate is assembled, turn the cylinder over and insert two swaging blocks in the hole of the lower plate. Place the upper plate over the swaging blocks and use the die cover shaft (Part# 55) to secure the swaging block and the back oil cylinder seat (Part# 58).

## OPERATION

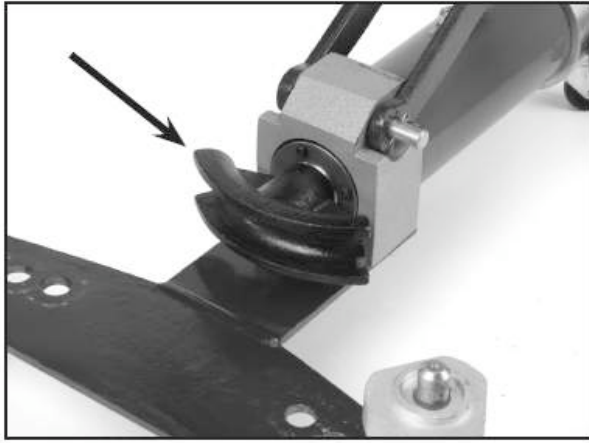
Before using, check the hydraulic oil in the cylinder by loosening the vented oil bolt (**Figure 1**) and visually ensure that the piston inside is covered in oil when the pipe bender is in the horizontal position.



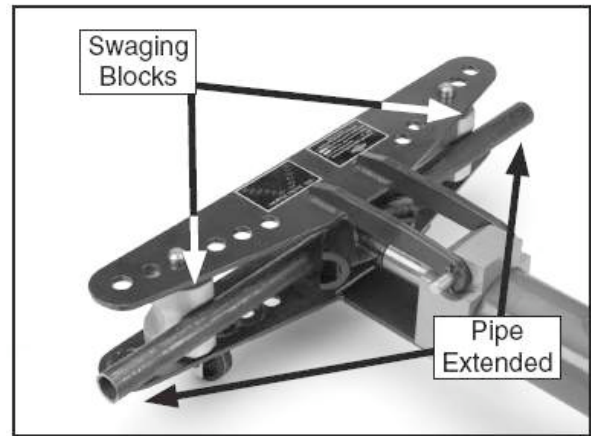
**Figure 1: Vented oil bolt**

## STEPS

1. Tighten release valve (Part# 26) by turning clockwise.
2. Loosen vented oil bolt (Part# 46).
3. Grease swaging blocks (Part# 68) and the tube to be bent.
4. Lift the upper plate (Part# 64) and affix bending die to the end of the cylinder ram as shown in Figure 2. Place two swaging blocks into the holes of lower plate (Part# 54) and place tube in front of them. Turn the swaging blocks so their grooves face toward the tube die (Figure 3).
5. To account for the pipe shortening during the bending process, make sure the pipe extends beyond the swaging blocks, as shown in Figure 3.

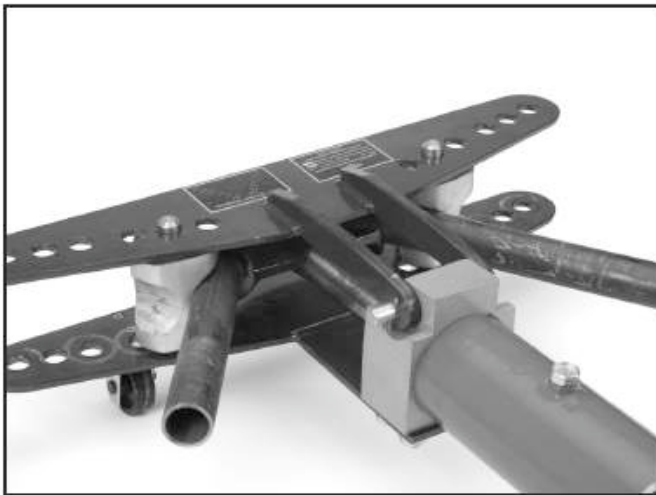


**Figure 2: Die installed on cylinder ram.**



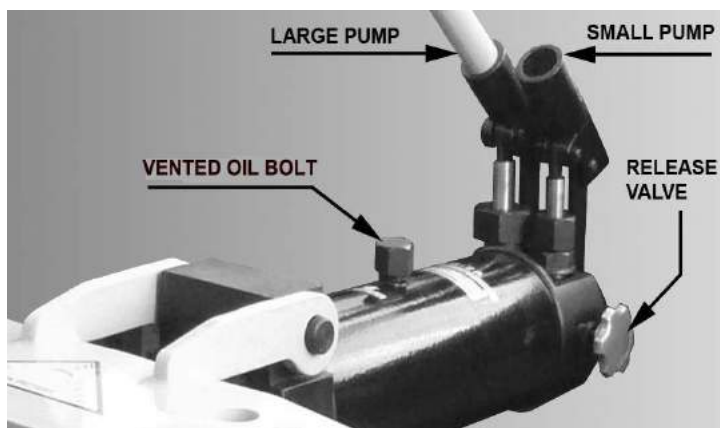
**Figure 3: Pipe is installed beyond swaging blocks to account for pipe shortening during the bend.**

**NOTE:** For short pipes, set the swaging blocks closer together, as shown in Figure 4, to ensure that the pipe extends beyond the swaging blocks to account for pipe shortening during the bend.



**Figure 4: Swaging blocks set close together for bending short pipes.**

6. Return upper plate to original position and use the advance pump (See Figure 5) to quickly advance the die.



**Figure 5: Operating pumps and release valve**

7. Use the forming pump to apply heavy pressure to bend the pipe to its desired angle.
8. When finished bending, release the pressure by opening the release valve. The ram will automatically retreat. Lift the upper plate to take out the bent tube.

#### **IMPORTANT:**

- Before use, check the oil in oil tank to make sure there is enough oil to operate pipe bender.
- Loosen vented oil bolt to ventilate.
- Before bending any pipe, the release valve must be closed.
- The outside diameter of pipe must fit the groove of tube die, or else the pipe will be shaken or the tube die will burst.
- The contact surface between tube and the two swaging blocks must be smooth. Coat swaging blocks with lubricating oil. Make sure a weld seam is not at the bending point.
- If air is in the pump, firstly loose the vented oil bolt. Raise the cylinder head to make the pipe bending machine tilt at 45° position. Then, pressing down the handle until there is no air in the cylinder. When the air emitted, loosen the release valve counterclockwise to make the cylinder ram go back and then place the pipe bending machine horizontally.
- Strictly observe the technical parameters while using the pipe bender. Excessive pressure is unadvisable since it will damage the machine.
- Periodically clean and maintain the machine. Use clean, filtered oil, making sure the filter (Part# 30) is cleaned regularly.
- Lock the vented oil bolt when finished using the machine.

## **Maintenance**

- It is basically maintenance free. However, the oil level should be kept constant at about 1 ¼ Qts.(141805), 1 7/8Qts.(426261), 3 1/8Qts.(426260) of quality hydraulic oil.
- Too much oil will force the surplus oil to leak from the cylinder seals and possible damage them.
- Not enough oil will cause loss of power as air will be sucked in, causing a drop in pressure.



**Figure 6: Vented oil bolt removed from cylinder.**

### ***NOTICE***

The oil bolt is internally vented and cannot be replaced with a regular hex bolt. You must replace it with another vented bolt. Normal hex bolts will block the flow of hydraulic fluid and cause the machine to fail. See the parts list to identify the part number for replacement.



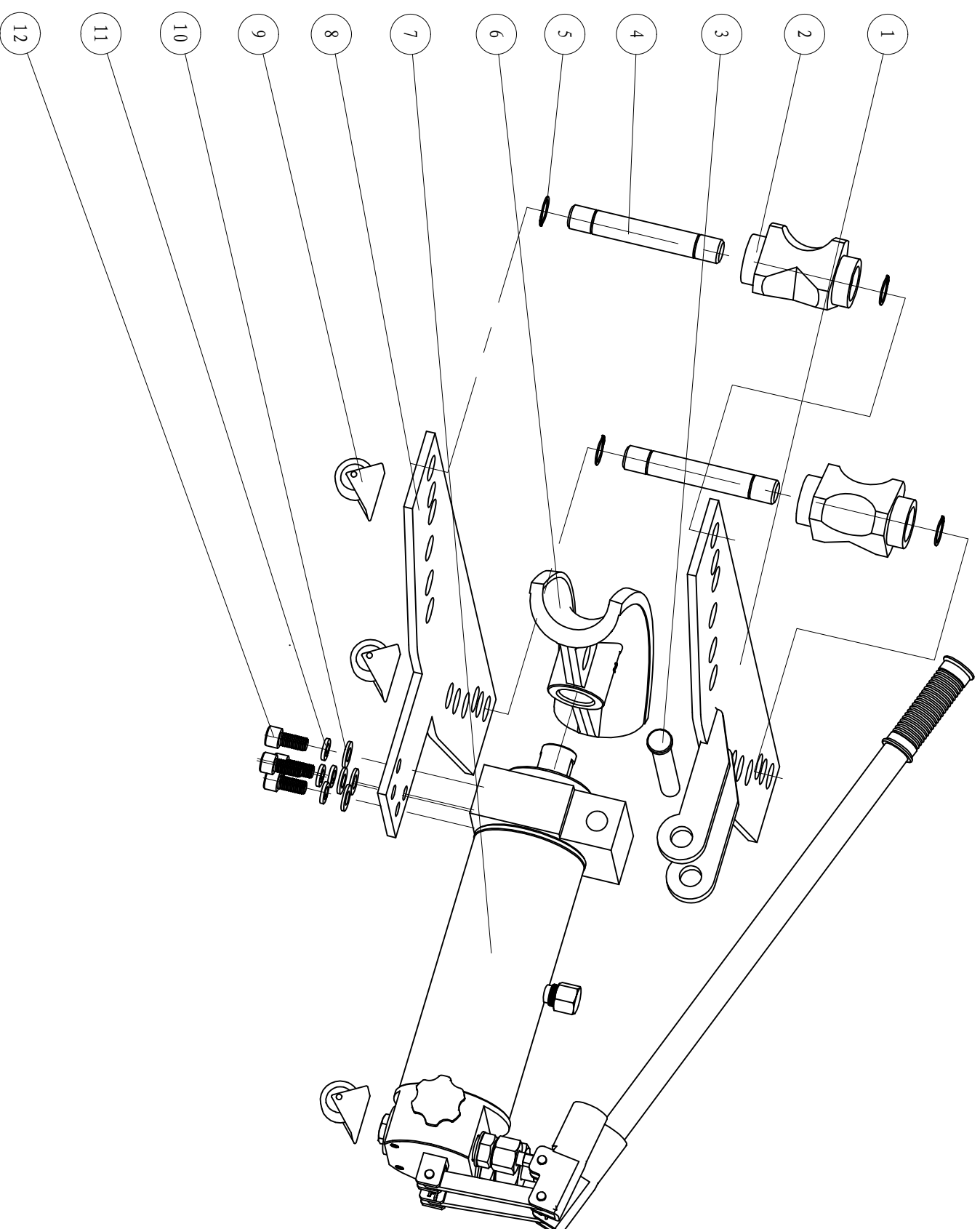
#### **CAUTION:**

Hydraulic fluid is under extreme pressure when the ram is under pressure. Always relieve the pressure with the release valve before removing the vented oil bolt shown in Figure 6.

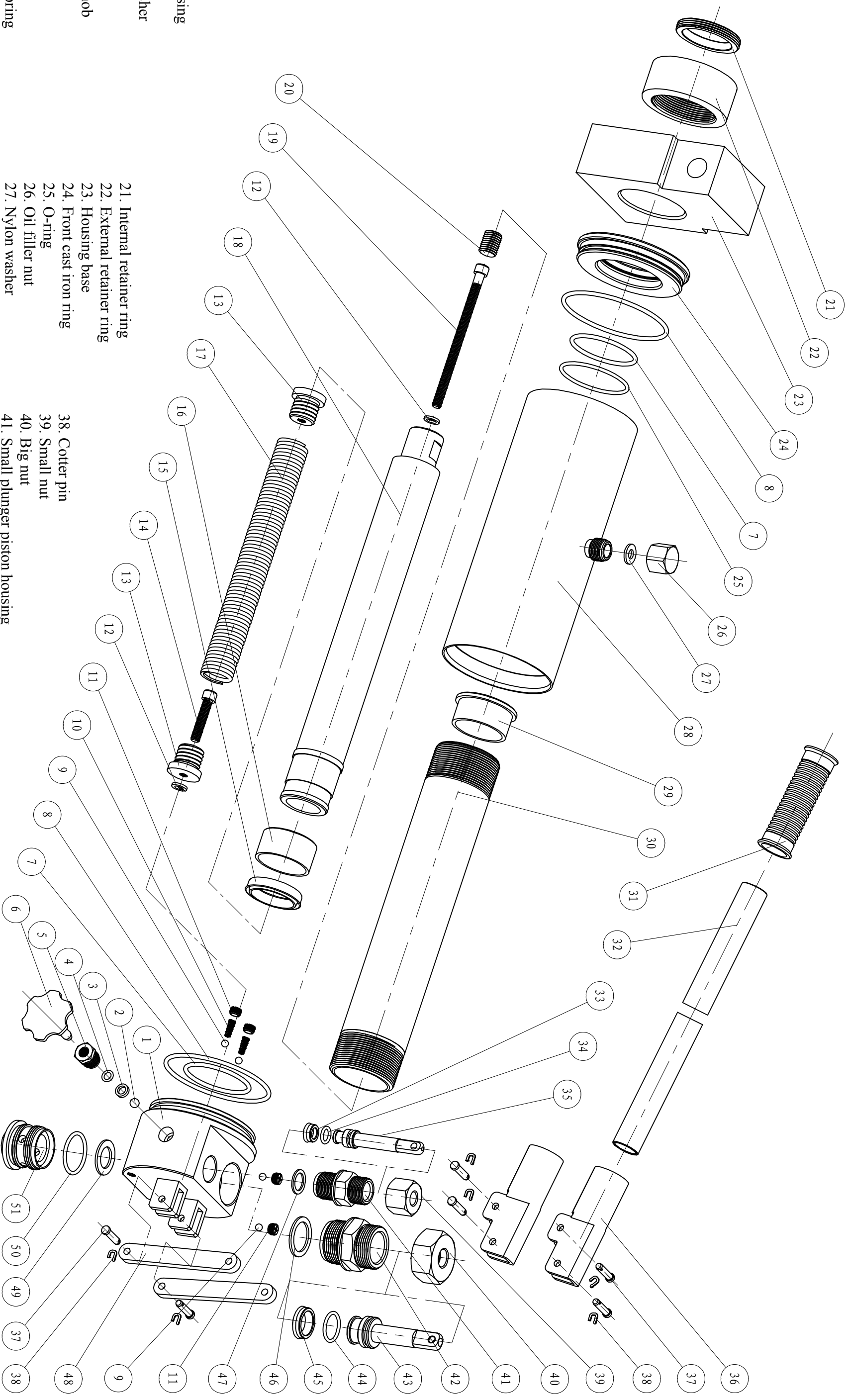
## **Troubleshooting**

1. The cylinder ram is extended feebly.
  - Check the steel ball in release valve (Part# 26) to see if it has fallen. Then tighten release valve clockwise.
  - Check the hydraulic oil to make sure the cylinder (Part# 45) is filled.
  - Check the vented oil bolt (Part# 46) to see if it is loose.
  - Change the polyurethane seal ring (Part# 36) in plunger pump.
  - Remove the air in cylinder.
2. There is air in the plunger pump or there is no oil in the plunger pump.
  - Remove the air in cylinder.
  - There isn't enough oil in the oil tank; add oil
  - Oil grade isn't according to standards, change with quality hydraulic oil.
  - There is dirt in the filter, and it must be cleaned. Dismantle filter with wrench and clean copper mesh.

## **Diagrams and Parts List**



- 01. Upper wing plate
- 02. Swage block
- 03. Pin for upper wing plate
- 04. Pin for swage block
- 05. Circlip Ø18mm for shaft
- 06. Bending die
- 07. Pump unit
- 08. Lower wing plate
- 09. All-around wheel caster
- 10. Flat washer Ø12mm
- 11. Spring washer Ø12mm
- 12. Hexagon socket head cap screw M12x25



- 01. Pump housing
- 02. Steel ball
- 03. Nylon washer
- 04. O-ring
- 05. Plug
- 06. Release knob
- 07. O-ring
- 08. O-ring
- 09. Steel ball
- 10. Tapered spring
- 11. Copper valve
- 12. Spring washer
- 13. Spring seat
- 14. Hexagon socket head cap screw
- 15. Yx shape sealing ring
- 16. Iron gland
- 17. Tension spring
- 18. Piston
- 19. Hexagon socket head cap screw
- 20. Hexagon socket set screw

- 21. Internal retainner ring
- 22. External retainner ring
- 23. Housing base
- 24. Front cast iron ring
- 25. O-ring
- 26. Oil filler nut
- 27. Nylon washer
- 28. Oil tank
- 29. Iron gland
- 30. Cylinder
- 31. Rubber grip
- 32. Handle
- 33. Yx shap sealing ring
- 34. O-ring
- 35. Small plunger piston
- 36. Handle seat
- 37. Pin for handle seat

- 38. Cotter pin
- 39. Small nut
- 40. Big nut
- 41. Small plunger piston housing
- 42. Big plunger piston housing
- 43. Big plunger piston
- 44. O-ring
- 45. Yx shape sealing ring
- 46. Copper washer
- 47. Copper washer
- 48. Strap
- 49. Steel washer
- 50. O-ring
- 51. Filter seat