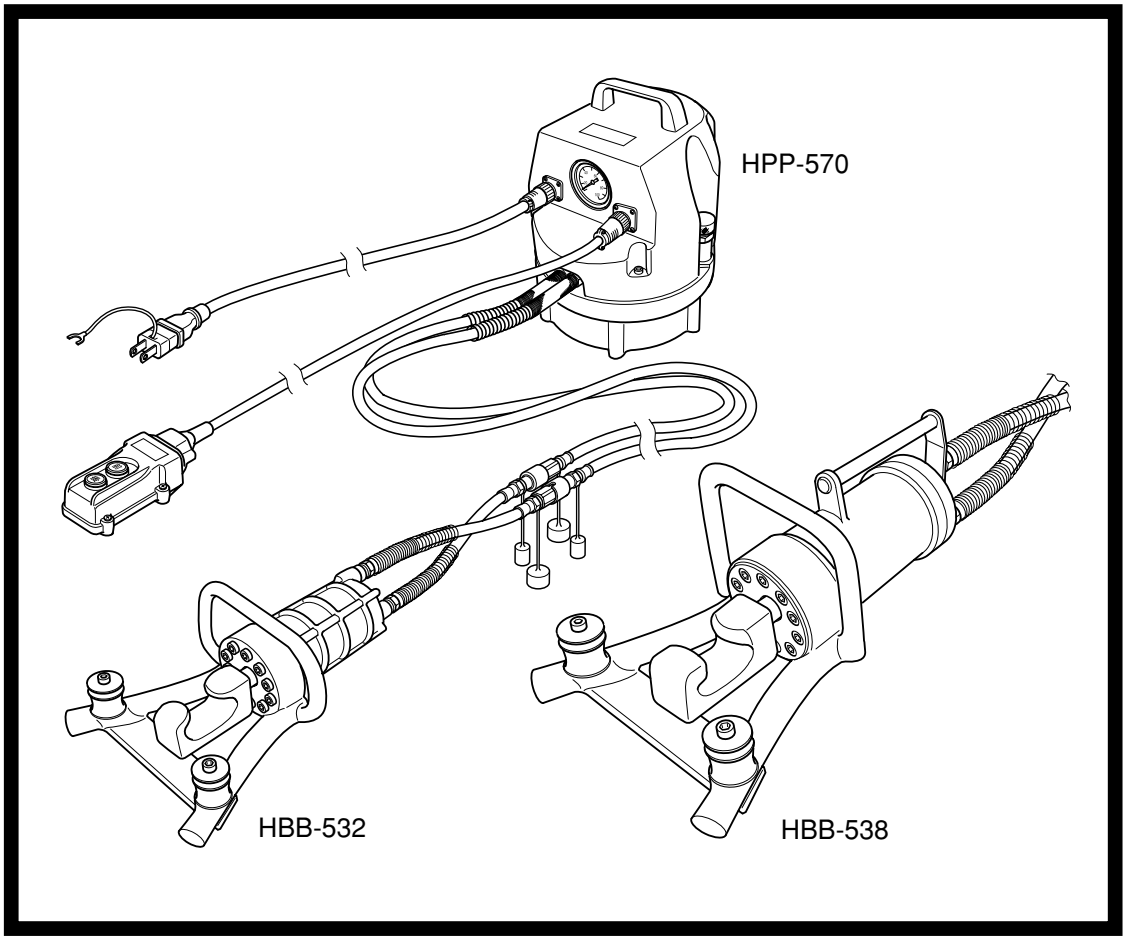
Ogura SEPARATE REBAR BENDER
Model:HBB-532 HBB-538
ELECTRO-HYDRAULIC PUMP
Model:HPP-570

Instruction Manual



Read, understand and follow all safety instructions and operating procedures. If you do not understand the instructions or if conditions are not correct for proper operation, DO NOT OPERATE THE MACHINE. Consult your supervisor or other responsible person.

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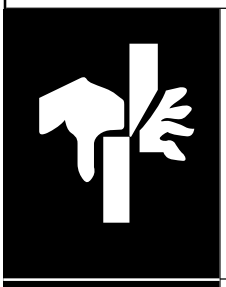
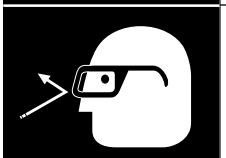
⚠WARNING

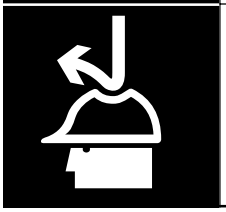


Unplug power when changing tooling units, or when servicing machine.
Unplug power anytime machine is not in use.
Keep fingers away from cutting area during operation.
Never place fingers in cutting area when machine is plugged in.
Never leave machine with plug in the power source.
Check that the switch is off before plugging the machine in.
Turn off all switches in the event of a power interruption.
Metal cutting punches dies and blades have sharp edges. Handle them carefully to avoid being cut.



Any tool can shatter. Always wear eye protection.
Seat material fully within cutting area.

Do not use the machine in damp area or where it may become wet.



Material is ejected at end of cut. Be sure that ejected slug cannot fall and cause injury.

SAVE THESE INSTRUCTIONS

Meaning of "caution" and "warning" indications

Caution: You may be slightly or lightly injured when you cannot avoid. This is also used when only a physical injury is predicted to occur.

Warning: You may die or be seriously injured when you cannot avoid.

*** **Ogura & Co., Ltd. shall not be responsible for any incidental damages or personal injuries resulting from negligence of Warnings and Safety Instructions contained in the Instruction Manual.**

SAFETY INSTRUCTIONS

⚠ WARNING

When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury, including the following:

1. READ ALL INSTRUCTIONS

2. Power Supply

The tool should be connected only to a power supply of the same voltage as indicated on the nameplate, and can only be operated on single-phase AC supply.

3. Grounding Instructions

3a. The double insulated model can be used from sockets without earth wire. The models which are not double insulated should be grounded while in use to protect the operator from electric shock.

3b. Extension Cords

Use only 3-wire extension cords that have 3-prong grounding type plugs and 3-pole receptacles that accept the tool's plug. Replace or repair damaged cords.
Make sure the conductor size is large enough to prevent excessive voltage drop which will cause loss of power and possible motor damage.

4. Replacement Parts

When servicing use only identical replacement parts.

5. Keep Work Area Clean

Cluttered areas and benches invite injuries.

6. Consider Work Area Environment

Do not expose tool to rain.
Do not use tool in damp or wet locations.
Keep work area well lit.
Do not use tool in presence of flammable liquids or gases.

7. Guard Against Electric Shock

Prevent body contact with grounded surfaces. For example: pipes, radiators, ranges, refrigerator enclosures.

8. Keep Children Away

Do not let visitors contact tool or extension cord.
All visitors should be kept away from work area.

9. Store Idle Tools

When not in use, tools should be stored in a dry and high or locked-up place - out of reach of children.

10. Do Not Force Tool

It will do the job better and safer at the rate for which it was intended.

11. Use Right Tool

Do not force small tool or attachment to do the job of a heavy-duty tool.
Do not use tool for purpose not intended - for example - do not use circular saw for cutting tree limbs or logs.

12. Dress Properly

Do not wear loose clothing or jewelry. They can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors.
Wear protective hair covering to contain long hair.

13. Always wear safety glasses or goggles

14. Do Not Abuse Cord

Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil and sharp edges.

15. Secure Work

Use clamps or a vice to hold work. It is safer than using your hand and it frees both hands to operate tool.

16. Do Not Overreach

Keep proper footing and balance at all times.

17. Maintain Tools With Care

Keep tools sharp and clean for better and safer performance.
Follow instructions for lubricating and changing accessories.
Inspect tool cords periodically and, if damaged, have repaired by authorized service facility.
Keep handles dry, clean, and free from oil and grease.

18. Disconnect Tools

When not in use, before servicing, and when changing accessories, such as punches and dies.

19. Remove Adjusting Keys and Wrenches

Form habit of checking to see that keys and wrenches are removed from tool before turning it on.

20. Outdoor Use Extension Cords

When tool is used outdoors, use only extension cords intended for use outdoors and so marked.

21. Stay Alert

Watch what you are doing. Use common sense. Do not operate tool when you are tired.

22. Check Damaged Parts

Before further use of the tool, a part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage or parts, mounting, and any other conditions that may affect its operation. A part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated elsewhere in this instruction manual.
Have defective switches replaced by authorized service center.
Do not use tool if switch does not turn it on and off.

23. Service at Factory Authorized Repair Center Only

24. Operating Near Welding Equipment

When operating any grounded electrical equipment near an arc welder, it is important that both are connected to the same earth ground. If they are not, personal injury could result. Severe damage to the unit could also occur.

25. SAVE THESE INSTRUCTIONS

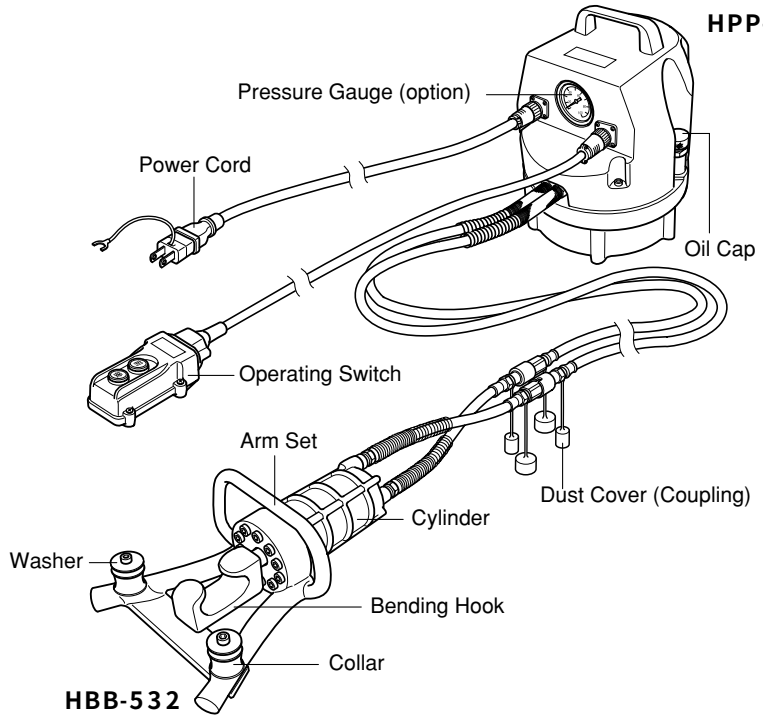
Extension Cord Gauge Selection

		Length of Cord in Feet								
115V		25 Ft.	50 Ft.	100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	400 Ft.	500 Ft.
220V		50 Ft.	100 Ft.	200 Ft.	300 Ft.	400 Ft.	500 Ft.	600 Ft.	800 Ft.	1000 Ft.
Nameplate Ampere Rating	0-2	18	18	18	16	16	14	14	12	12
	2-3	18	18	16	14	14	12	12	10	10
	3-4	18	18	16	14	12	12	10	10	8
	4-5	18	18	14	12	12	10	10	8	8
	5-6	18	16	14	12	10	10	8	8	6
	6-8	18	16	12	10	10	8	6	6	6
	8-10	18	14	12	10	8	8	6	6	4
	10-12	16	14	10	8	8	6	6	4	4
	12-14	16	12	10	8	6	6	6	4	2
	14-16	16	12	10	8	6	6	4	4	2
	16-18	14	12	8	8	6	4	4	2	2
	18-20	14	12	8	6	6	4	4	2	2

ADDITIONAL SAFETY INSTRUCTIONS FOR TOOL

1. When shipped, the tool operating pressure is correctly set. Do not change this setting as excessive operating pressure is dangerous and can cause hoses and parts to fail with risk of personal injury.
2. When operating the tool, the minimum permitted bending radius for the hoses is 100mm. Operating with a hose bending radius of less than 100mm could cause a burst hose.
3. Do not apply excessive bending forces to the hoses (especially around the coupling). If a hose is subjected to such a force the bent part is weakened and may burst. Replace any hose that is bent or deformed.
4. Do not pull the hoses during operation as this could cause disconnection of the couplings.
5. Do not subject the hoses to external pressure as this will damage the hoses and greatly reduce the hose life.
6. Do not twist the hoses as this could cause a burst hose.
7. Do not subject the tool or hoses to excessive vibration as this could cause oil leaks or a burst hose.

NAME OF THE PARTS AND SPECIFICATIONS



■ ELECTRO-HYDRAULIC PUMP

Model	HPP-570
Weight (kg)	20.5kg
Dimensions Net (L × W × H)	257 × 257 × 327.5mm
Motor (single-phase)	1,330W (115/230V 50/60Hz)
Oil Tank Capacity	2.2 liters
Usable Oil Capacity	1.0 liter (approx)
Output	1,000cc/min
Hose Length	3 meters
Standard Equipment	Hydraulic oil, Carton Box

■ SEPARATE REBAR BENDER

Model	HBB-532LT	HBB-532	HBB-538
Weight (kg)	14kg	16kg	30.9kg
Dimensions Net (L × W × H)	487.5 × 268.5 × 181.5mm	438 × 311 × 172.5mm	509 × 356 × 205mm
Bending Capacity (Dia. mm)			
Grade 40: Tensile strength 490N/mm^2 70,000PSI	Up to 32mm	Up to 32mm	Up to 38mm
Grade 50: Tensile strength 560N/mm^2 80,000PSI			
Grade 60: Tensile strength 620N/mm^2 90,000PSI			

■ Standard Equipment

HPP-570

Spare oil (#32) 150cc
Plug adapter 1pc

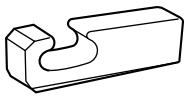
HBB-532LT, 532

Hex wrenches (8mm) 1pc
Spanner (24mm) 1pc
Bending roller 1set

HBB-538

Hex wrenches (8mm) 1pc
Spanner (36mm) 1pc
Bending roller 1set

■ Bending Hook C (option)

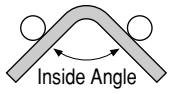


*For modification of 90 ° inside angle
(For HBB-538,120)

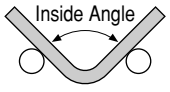
■ Angle for Bending and Modification

	Bending Angle with Roller			Bending Angle without Roller			Inside Angle of Existing Bends Standard Hook			
	HBB-532LT	HBB-532	HBB-538	HBB-532LT	HBB-532	HBB-538	HBB-532LT Pull modification	HBB-532LT Push modification	HBB-532	HBB-538
D13	82°	82°	96°				125°	108°	125°	134°
D16	78°	78°	92°				130°	113°	130°	136°
D19	69°	69°	89°				135°	118°	135°	138°
D22	65°	65°	85°				137°	120°	137°	141°
D25	65°	65°	81°	90°	90°		138°	121°	138°	143°
D29			76°	85°	85°	91°	145°	128°	145°	146°
D32				80°	80°	87°	147°	130°	147°	148°
D38						80°				154°

■ Bending angle

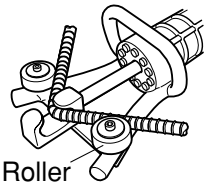


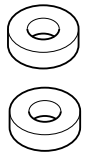
(Push Bending)



(Pull Bending)

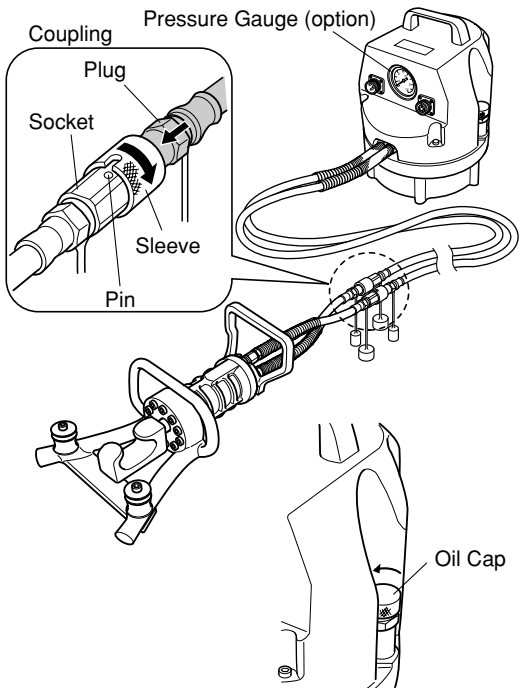
■ With Roller





Roller(set)

PUMP AND BENDER SETTING UP



Before the Separate Bender can be used it should be connected to the Ogura electro-hydraulic pump.

⚠ CAUTION

Only use the Separate Bender with the Ogura electro-hydraulic pump provided. Use with any other pump may cause damage to components and will impair performance.

1. Connect the couplings of the two hoses from the Pump and the Separate Bender, as shown in the drawing on the left. After connecting each coupling, rotate the Sleeve so that the notch is no longer in line with the Pin. This is to prevent the coupling from being disconnected accidentally.

⚠ CAUTION

During use, the Pump should be placed in an upright level position with the handle on top. If operated on a slant oil may leak from the oil cap.

2. Before use, loosen the Oil Cap on the Pump by one turn. (For shipping and transport, the Oil Cap is tightened to avoid leaking) Loosen the Oil Cap just before starting operation and after connecting the Pump and the Separate Bender.

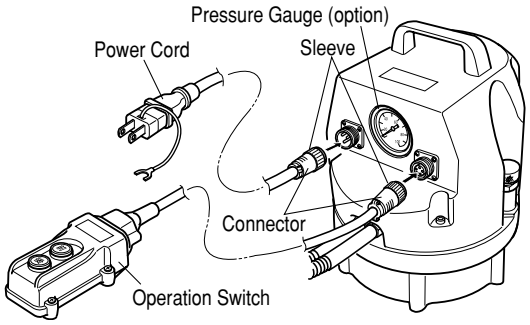
⚠ CAUTION

Operating the tool without loosening the oil cap will cause large pressure changes inside the oil tank and may result in damage to the seals and other parts.

⚠ CAUTION

Before disconnecting the hoses of the Separate Bender and Pump, first return the Bending Rod to its starting position (fully retracted) and then extend it about 4-5mm. After this the couplings can be disconnected. Failure to follow this procedure may cause difficulty when the couplings are to be reconnected because of trapped high oil pressure.

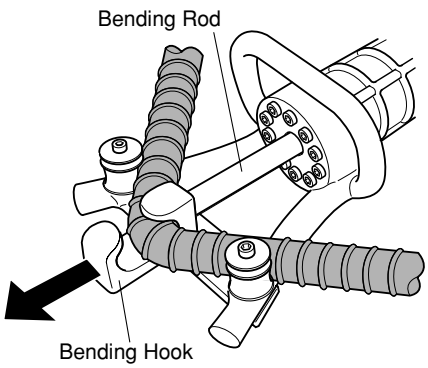
ATTACHING THE POWER CORD TO THE PUMP

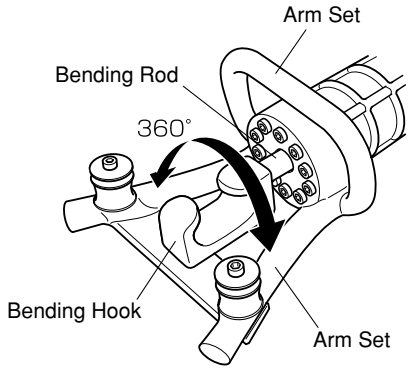


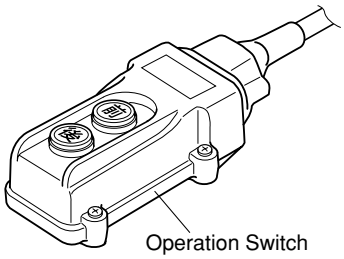
1. Insert the connector of the Power Cord into the socket on the Pump and rotate the sleeve to lock in position, as shown in the drawing on the left. Confirm that the voltage of the power supply is the same as the pump, 115 or 230V single phase. Please note that, when using an extension cord there can be a voltage drop and loss of power may occur.

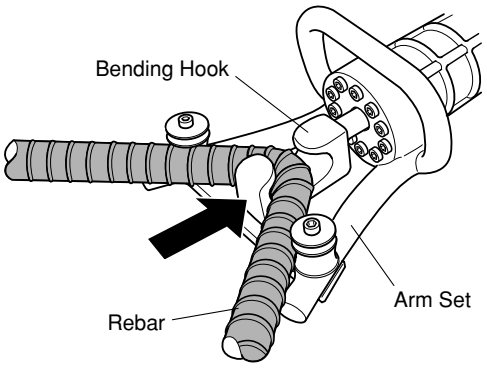
2. Insert the connector of the Operation Switch into the socket on the Pump and rotate the sleeve to lock in position, as shown in the drawing on the left.

OPERATING PROCEDURE









Note: **Before operation, turn the Bending Hook counterclockwise to confirm that the Bending Hook is fixed securely to the Bending rod.**

1. Confirm that the voltage of the power supply is the same as the voltage indicated on the name plate.

2.1 Push Bending

With the Bending Rod fully retracted, position the reinforcing steel bar to be bent in the lower Hook of the Bending Rod. Push the “FORWARD” button on the Operation Switch and extend the Bending Rod to make the bend.

2.2 Pull Bending

With the Bending Rod fully extended, position the reinforcing steel bar to be bent in the upper Hook of the Bending Rod. Push the “BACK” button on the Operation Switch and retract the Bending Rod to make the bend.

Note: After the bending operation is completed it will be necessary to reverse the direction of movement of the Bending Rod so that the reinforcing steel bar can be removed from the tool.

✻ Rotating function of the Bending Arm Set

The Bending Arm Set with Handle can be rotated freely through 360 degrees to achieve the best position for the operating environment.

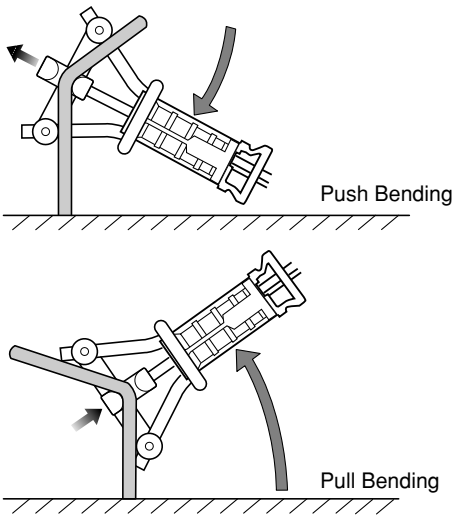
2.3 To modify bends in reinforcing steel bar

To change the rebar bend angle, place the Bending Hook over the centre of the bend in the rebar to be modified and operate as per paras 2. and 3. above. When the inside angle of the bend to be modified is less than the minimum angle for the standard Hook (see Table, Page 6), the optional Bending Hook C, which is suitable up to 90 degrees inside angle (For HBB-538, 120 degrees), should be used.

⚠ CAUTION

Ensure that the Bending Hook is placed over the top centre of the bend to be modified. Operating with the Hook off centre may put excessive force on the Bending Rod and Hook, resulting in damage or breakage.

3. The Bending Rod will continue to move as long as the “FORWARD” or “BACK” button is being pushed. The speed of movement of the Bending Rod (continual or inching) is controlled by how hard the button is pushed.



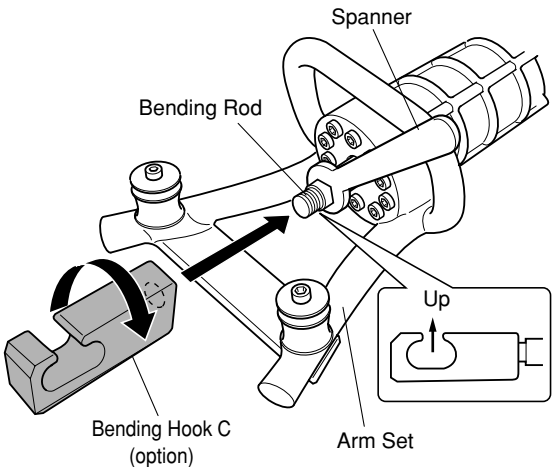
⚠ CAUTION

To avoid damaging or breaking the Bending Hook

• The Bending Hook is screwed onto the Bending Rod and together they are free to rotate. To prevent damage to the Hook and Rod during operation ensure that the Bending Hook is screwed firmly onto the Bending Rod. See “Instructions for changing the Bending Hook” on this page.

• When bending reinforcing steel bar that is fixed in Position, the tool, not being fixed, will move. Ensure that there is enough space to allow the tool to move. If there is insufficient space and the tool contacts the floor, wall, ceiling, etc., the excessive forces generated may damage or break the Bending Rod. See “SPECIAL INSTRUCTION FOR BENDING AND STRAIGHTENING REBAR” on page 10.

Instruction for changing the Bending Hook



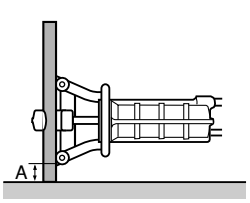
The Bending Hook, which is screwed onto the Bending Rod, can be replaced with the optional Bending Hook C. This is done when the inside angle of a bend to be modified is too acute for the standard Bending Hook. The optional Bending Hook C is suitable up to 90 degrees. (For HBB-538, 120 degrees.)

1. Hold the Bending Rod firmly with a spanner to prevent it from turning and unscrew the Bending Hook in a counter clockwise direction, to remove it from the Rod. If it is tight it may be necessary to use a spanner or bar through the hook to loosen it first.
2. Screw the optional Bending Hook C onto the Bending Rod by hand in a clockwise direction until it will go no further. Using a spanner or bar through the hook give it a final tighten to ensure that it is fully screwed onto the Rod.
3. With a spanner rotate the Bending Rod so that the opening in the Bending Hook is facing up.

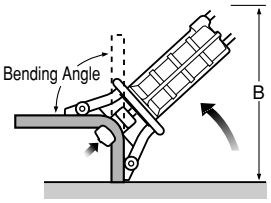
The Bending Hook and Bending Rod can be rotated together. The Bending Arm Set and the Bending Rod with Bending Hook can be turned to the best position for the bending situation.

SPECIAL INSTRUCTIONS FOR BENDING AND STRAIGHTENING REBAR

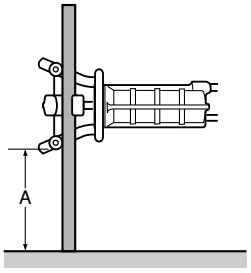
Bending



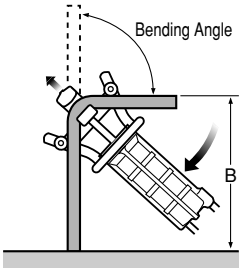
Before Bending



Pull Bending



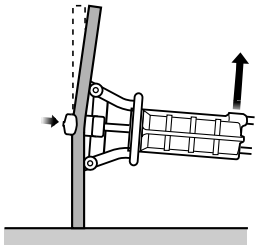
Before Bending



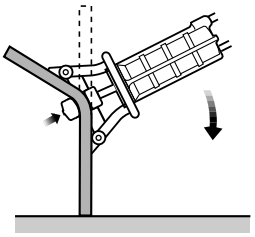
Push Bending

Modifying Existing Bends

Standard Hook

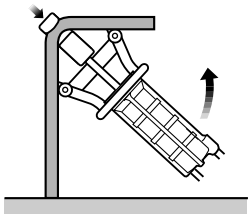


Before Modifying

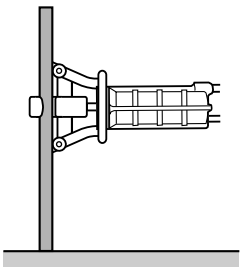


Pull Bending

Bending Hook C



Before Modifying



Pull Bending

To bend reinforcing steel bar that has one end fixed to the floor, wall, ceiling, etc.

●When bending reinforcing steel bar close to the floor, wall, ceiling, etc., the "Pull Bending" method should be used. When "Pull Bending", the tool will move in the direction of the arrow and away from the surface, as shown in the drawing on the left. Before starting, ensure that there is sufficient space for the tool to move (see "A" and "B" in the drawing on the left and their dimensions in the following table).

	A	B
HBB-532LT	55mm	440mm
HBB-532	80mm	555mm
HBB-538	71mm	600mm

●When there is not enough space for "Pull Bending", the "Push Bending" method should be used. When "Push Bending", the tool will move in the direction of the arrow and towards the floor, wall, or ceiling etc., as shown in the drawing on the left. Before starting, ensure that there is sufficient space for the tool to move (see "A" and "B" in the drawing on the left and their dimensions in the following table).

	A	B
HBB-532LT	270mm	410mm
HBB-532	313mm	462mm
HBB-538	336mm	518mm

To modify bend in reinforcing steel bar that has one end fixed to the floor, wall, ceiling, etc.

The tool will move parallel to the floor, wall, ceiling, etc., as shown in the drawing on the left. The max achievable modified angle is shown in table on page 6.

Note: **Up to 90 degrees of modification is possible by using the Bending Hook C (For HBB-538, 120 degrees). but it should be noted that the steel bar can fracture during the bending process depending on the material of the bar.**

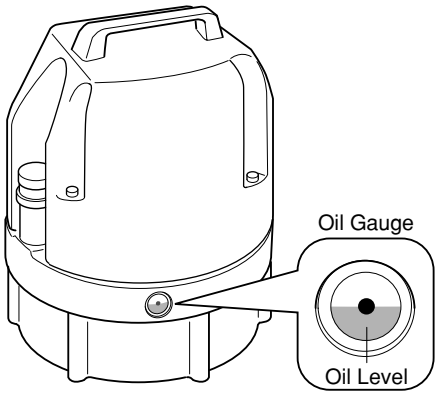
⚠ WARNING

Operating the tool where there is insufficient space (see table) will result in forced contact between the tool and obstacle causing damage to the tool and Bending Rod.

⚠ WARNING

Do not bend material that is cracked or chipped as this may cause an accident or injury to the operator.

ADDING OIL



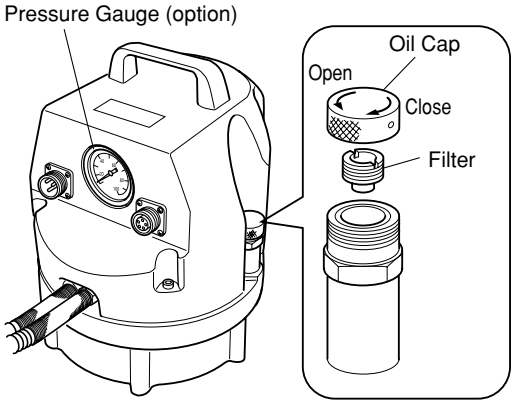
The Pump, which is electro-hydraulic, is filled with oil when shipped from the factory. Do not attempt to add oil as long as the tool performs well. When the oil-pressure is not enough for the required operation, check the oil level as follows.

Check the oil level.

The Oil Gauge Window is on the front of the Pump. If the oil level is below the red point at the center of the window, add the oil according to the following procedure.

Add the oil

1. Unscrew and remove the Oil Cap by turning it counterclockwise.
2. Unscrew and remove the Filter by turning it counterclockwise, using the screwdriver.
3. Add oil as necessary.
4. Replace the Oil Cap and the Filter. If the tool is to be used for further operations the Oil Cap should not be fully tightened but set at one complete turn before the fully tightened position. This is to allow the Oil Cap to breathe so that an equal pressure is maintained in the oil tank.

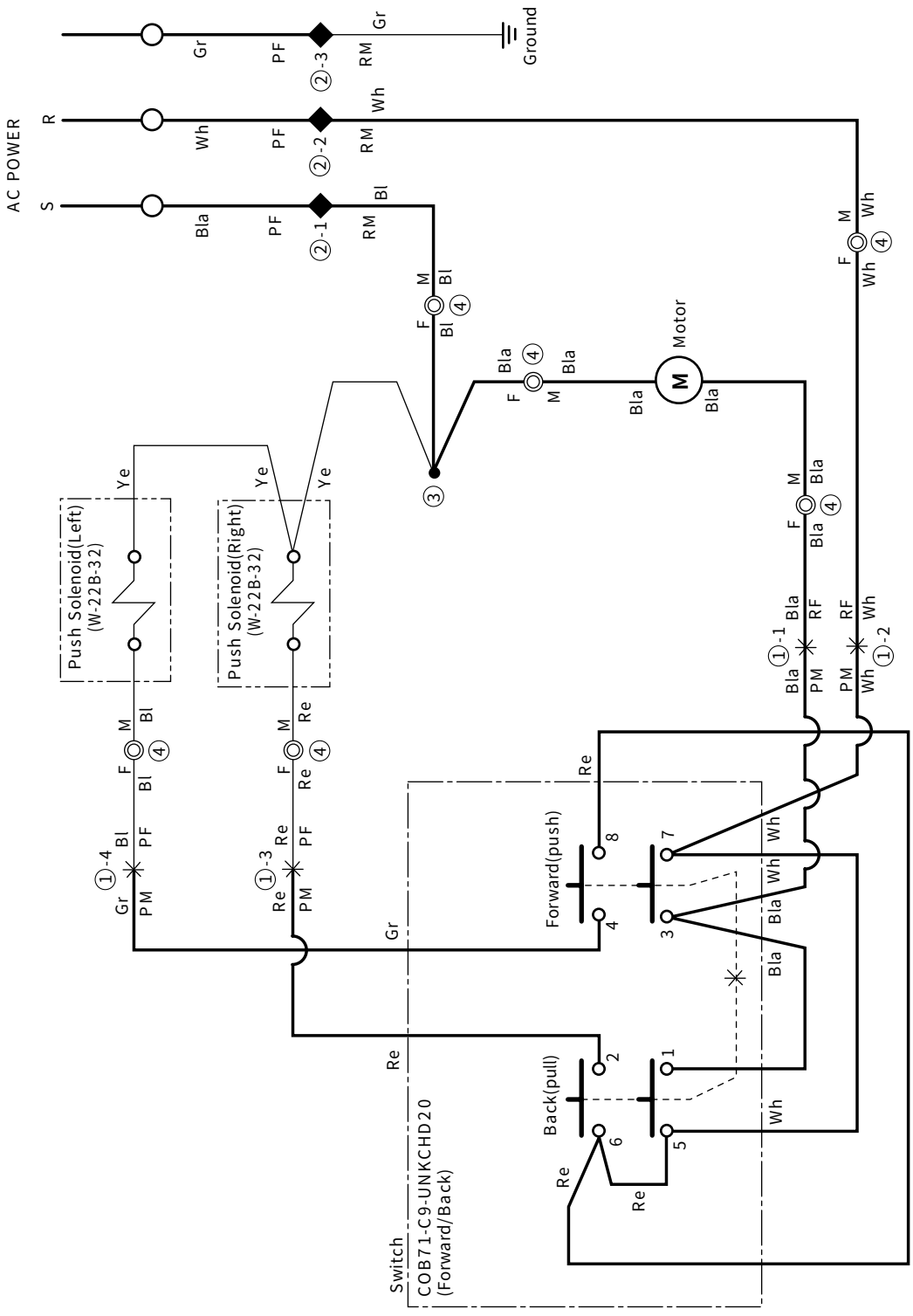


Note: For transportation, the Oil Cap should be tightened securely to prevent any oil escape.

Note: During use, the Pump should be placed in an upright level position with the handle on top. If operated on a slant oil may leak from the oil cap.

NOTE: Only pure hydraulic oil as recommended by Ogura & Company Ltd. should be used in this tool. Use Ogura supplied hydraulic oil, Super Hyrando #32 (Nippon Oil Corporation) or anti-wear hydraulic oil, ISO Viscosity Grade 32. Do not use any other oil as this may cause damage to the gaskets and other internal machine parts.

WIRING DIAGRAM



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