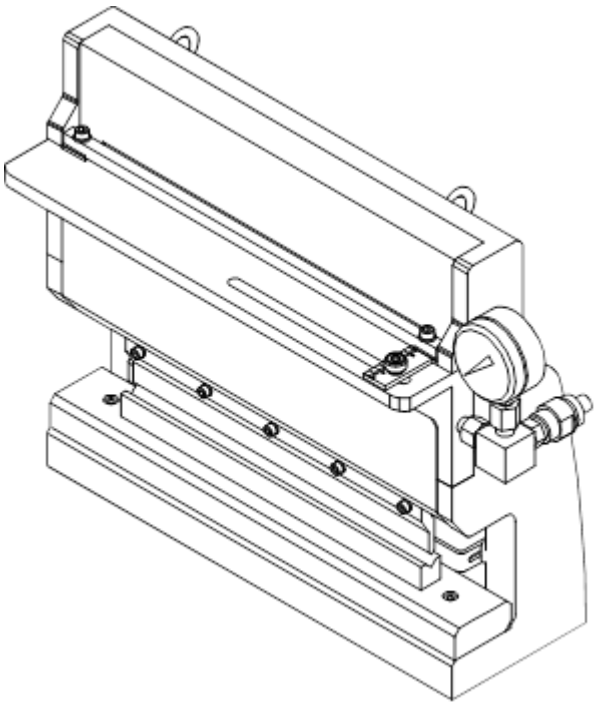
NITTOH Power

Cut & Bending Machine

CB-5

OPERATION & MAINTENANCE MANUAL



1. FOR SAFE USE

Two types of pictorial symbols are used in this instruction manual to ensure correct use of the product and to prevent harm to you or others or damage to property. The symbols and their meanings are as follows. Please read the text after understanding the contents carefully.

⚠ WARNING	As the result of improper use or operation in disregard of the indications, dangerous states may happen, causing the risk of death or serious injury.
⚠ CAUTION	As the result of improper use or operation in disregard of the indications, it will cause the possibility of slight or medium degree of injury or material damage only.

Cautions when installed

⚠ WARNING
■ Please install the product on a flat and stable surface. Do not install the product in an unstable place, such as on a wobbly stand or on a tilt. If the product falls, it may cause injury. ■ When moving the product, be sure to have two or more people carry it. ■ Do not use the product in places where there is a risk of ignition or explosion. Do not use the product in a place where flammable liquids or gases are present. There is a risk of explosion or fire.

⚠ CAUTION
■ Please avoid rain and moisture, and use it in a place with as little dust as possible. ■ Avoid direct sunlight during the summer months, as the temperature of the hydraulic fluid may rise, causing problems with processing and equipment. ■ If the pump is used outdoors in extremely cold weather, attach a winter cover to the pump. The viscosity of the hydraulic fluid will increase as the temperature of the fluid drops, which may cause problems with processing and equipment.

Cautions when in use.

⚠ WARNING
■ Do not disassemble or modify the product. Do not disassemble except where instructed to do so (e.g., at the fuel supply valve). In particular, do not change the relief pressure setting. Do not attempt to change the relief pressure setting, as this may result in incomplete processing or damage to the frame or tools. ■ Be careful of electric shock. Do not pull out the power plug with wet hands. Be sure to ground the unit with the grounding clip on the power plug before use. Do not use this product near an electric welding machine or on grounded materials or equipment. ■ Use the "UP-35RH-CB" electric pump. This machine is designed for 34.3MPa (350kg/cm2). The use of other pumps, especially those with different pressure settings, may result in incomplete processing or damage to the frame and tools. ■ Never put your hand or any part of your body near the cutting blade or bending die during operation.
⚠ CAUTION
■ Do not work beyond the capacity of the machine. If you work beyond the capacity of the machine, it will not be able to process perfectly. It will also damage the equipment. ■ Always work alone. It is dangerous to work with more than one person. ■ The power supply for the electric pump is AC100V or AC110V or AC200V or AC 220V (50/60Hz) single phase. It depends on a country. ■ If the pump is used at the wrong voltage (a low voltage), it may burn out or generate heat. Please pay attention to the voltage drop especially when using a generator. ■ When unplugging the power supply from the outlet, be sure to grab the power plug and pull it out. Pulling the power cord out of the outlet without grasping the power plug may result in disconnection or short circuit. ■ When using an auxiliary cord, use a cord with a thickness of 1.25 mm^2 or greater and a length of 10 m or less to prevent voltage drop.

Cautions when in use.

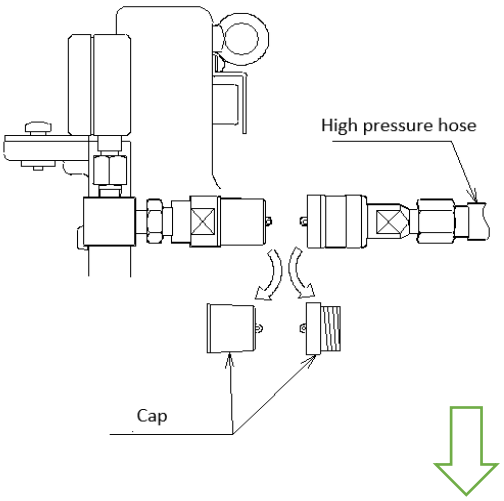
⚠ CAUTION

■ Connect the coupler securely in the following manner.

Unplug the power supply before connecting the coupler.

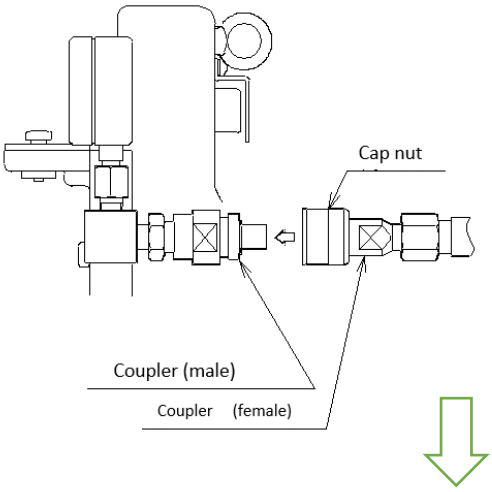
① Remove the coupler cap.
Make sure there is no dust or debris on the connection.

② Insert the coupler (female) into the coupler (male) all the way to the back.

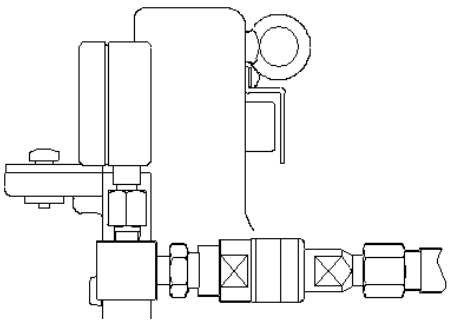


③ Turn the bag nut of the coupler (female) and tighten it.

④ Pull the main unit and high-pressure hose to make sure there is no rattle.

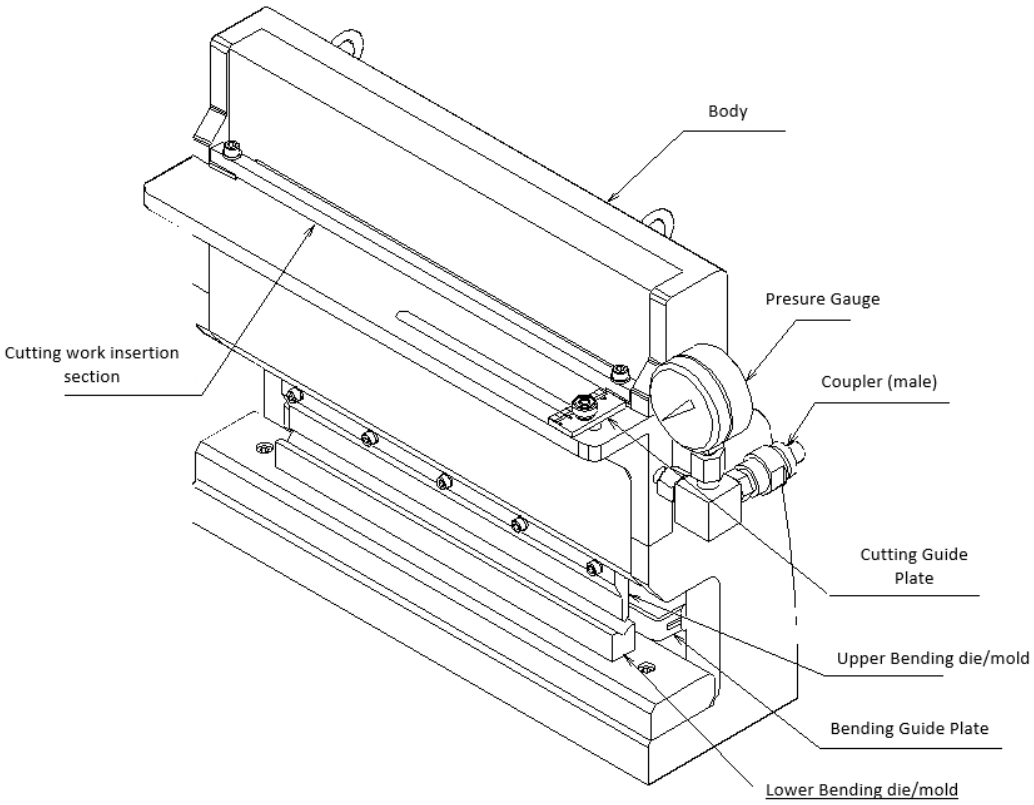


⑤ To remove the coupler, loosen the bag nut of the female coupler by turning it, pull it out of the bag nut, and then pull out the male coupler. When removing the coupler, make sure that no pressure is being applied before proceeding.
After removing the coupler, put on the cap to prevent dust from sticking to it.

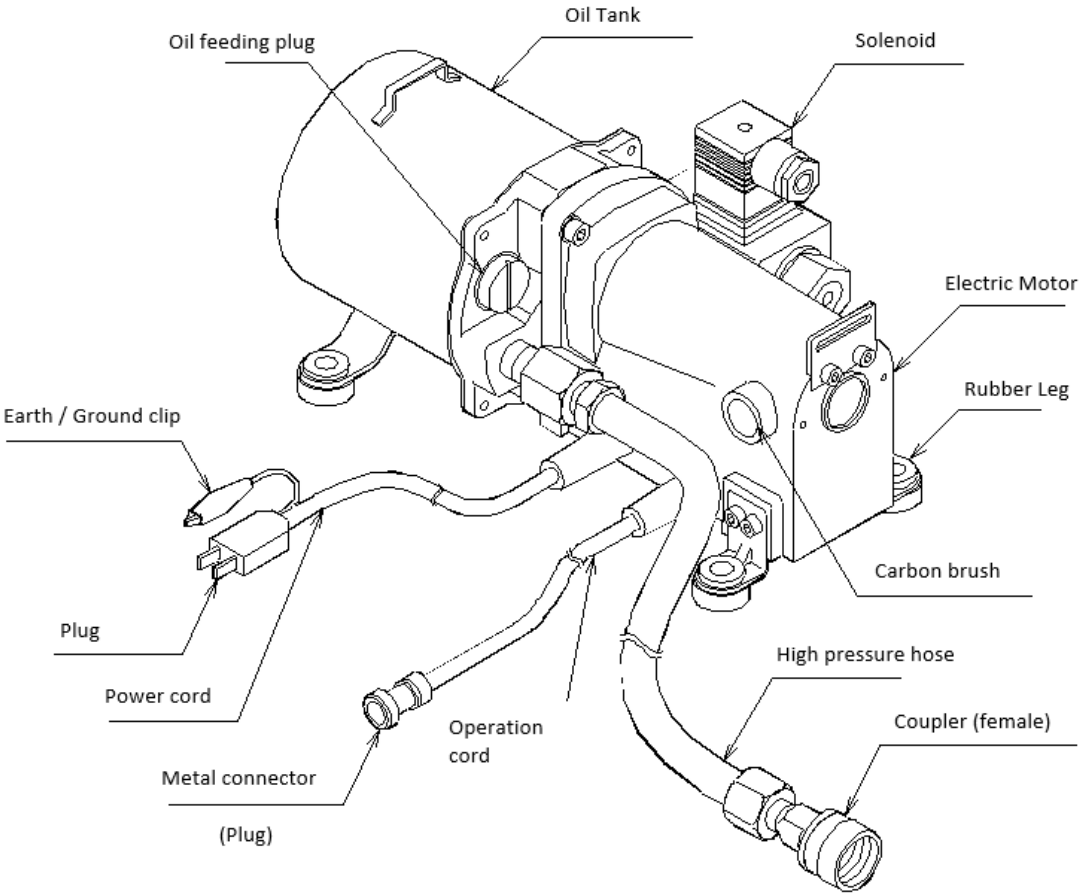


2. COMPONENTS' NAMES

Cut & Bending machine (CB-5)



Electrical pump (UP-35RH-CB)



3. PREPARATION BEFORE WORKING

3-1) Checking the product

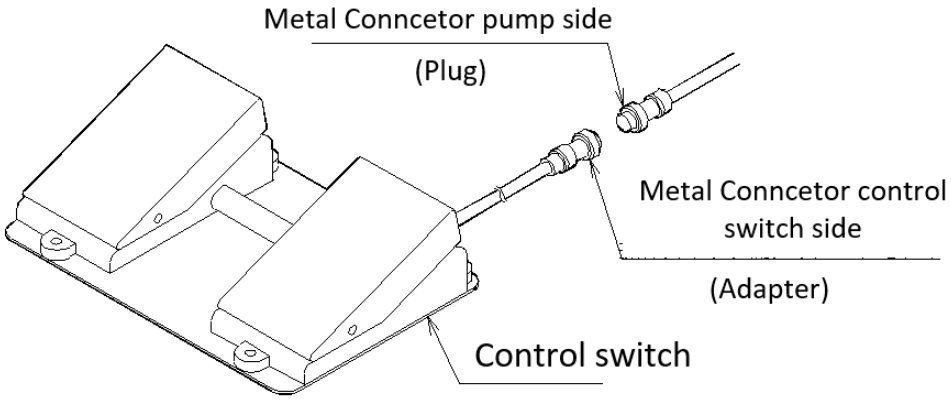
Please make sure that there is no damage or oil leakage during transportation.

3-2) Checking the power supply

The power supply for the electric pump is AC100V or AC110V or AC200V or AC 220V (50/60Hz) single phase. It depends on a country. Be sure to ground the unit when using it.

3-3) Connecting the metal connector

Insert the metal connector (plug) on the pump side into the metal connector (adapter) on the control switch side, and tighten the ring of the plug to the adapter by turning it clockwise to make a secure connection.

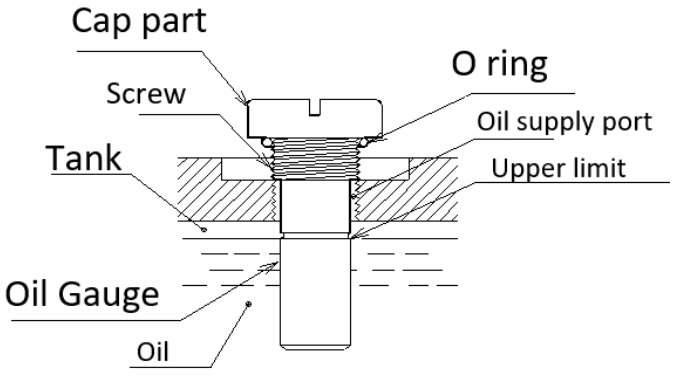


3-4) Checking the hydraulic oil (in case of a drop in work efficiency or abnormality)

When the work efficiency drops or an abnormality occurs, one of the causes may be insufficient oil level. To check the oil level, follow the steps below.

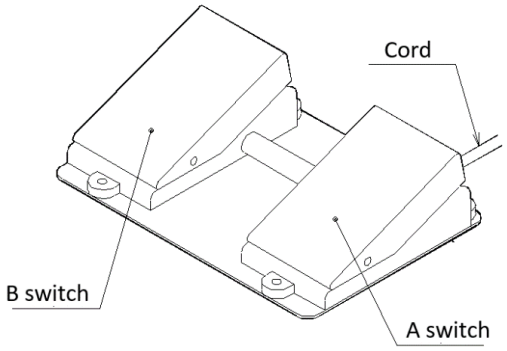
(1) Make sure that the tool is in the fully returned state. (2) Unplug the power supply.

(3) Stand the pump upright with the oil tank side down. Turn the oil supply plug counterclockwise with a flat head screwdriver to remove it. At this time, be careful not to lose the O-ring. (5) Clean the oil gauge part of the removed plug with a cloth, etc., and then insert it back into the oil supply port. At this time, do not screw it in, but make sure that it touches the oil supply port. (6) If the oil gauge is filled to the upper limit, it is normal. If it is low, replenish the oil. (7) After confirming that the oil level is normal, turn the oil cap clockwise to tighten it. Be careful not to tighten it too much, or the O-ring will be damaged.



4. HOW TO OPERATE

a) When the A switch is pressed, the motor will rotate and the tool will descend. When you release the switch, the motor stops and the tool stops at that position.
b) Pressing the B switch once will raise the tool and return it. It is not possible to stop during the return process.



5. HOW TO PROCESS

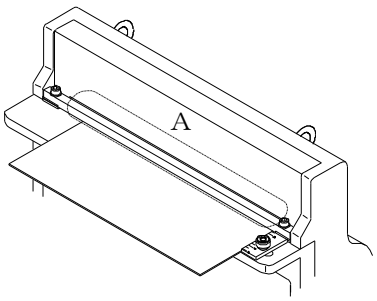
⚠ CAUTION　Never cut and bend at the same time.

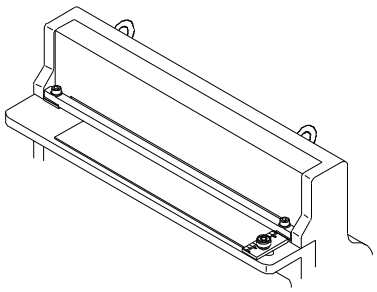
5-1) Capacity

The limit capacity is as follows. Never process more than the capacity.
Thickness: Steel: 1.6 mm / Stainless steel - 1.2mm
Processing width: 300mm /　For steel, plate thickness of 2.3mm can be processed up to 100mm in width, and plate thickness of 3.2mm can be processed up to 35mm in width.

5-2) Cutting

To cut, follow the steps below.
(1) Make sure that no pressure is applied.
(2) Set the workpiece.
Insert the workpiece between the table and the guide.
Place the workpiece at least 10 mm ahead of the cutting edge.
If it is shorter than this, the workpiece may bite the cutting edge and make it impossible to work.
a. Cutting a long workpiece
Draw a rule on the workpiece.
Then decide the position while looking at A (blade) in the figure.

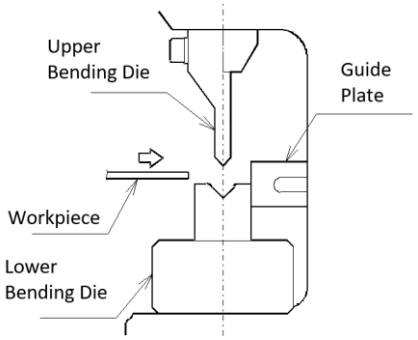




b. Cutting a short workpiece (70 mm or less)

The scale on the cutting guide plate indicates the distance from the cutting edge. Use this as a guide when positioning the workpiece.

(3) The cutting edge descends when pressing the A of operation switch. The UP-35RH-CB is a pump with high stopping accuracy. If you release the A switch, it will stop at that position. Gradually move the blade down and adjust the cutting position.



5-3) Bending

For bending, follow the steps below.

(1) Make sure that no pressure is applied.

(2) Positioning of the workpiece

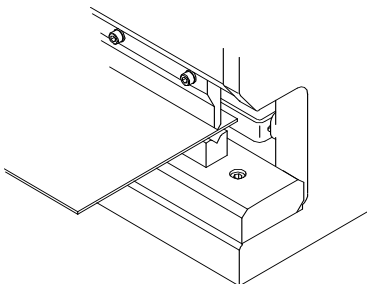
Insert the workpiece between the upper die and the lower die, and set it at the center of the die.

Adjust the bending position by the position of the guide plate.

The adjustment range is 10 mm to 54.5 mm from the bending part.

If the adjustment range is exceeded, remove the two locking screws on both sides of the guide plate and remove the guide plate.

The guide plate can be moved back and forth by loosening the two locking screws on both sides.



To determine the position of the guide plate, apply a scale to both ends of the guide plate and match the distance.

Once the position is determined, tighten the locking screws to fix it in place.

(3) Insert the workpiece until it touches the guide plate. If the guide plate has been removed, use a squeegee to align the workpiece.

(4) While the A switch is pressed, the upper die descends.

The angle of the groove of the lower die is 90° , but the bending angle at the stroke end varies depending on the thickness and width of the workpiece. If an accurate angle is required, we recommend using a pressure gauge to control the angle or an optional pressure switch.

The UP-35RH-CB is a pump with high stopping accuracy. If you release the A switch, it will stop at that position. Gradually move the upper die down and adjust the bending position.

(5) When the bending is completed, press the B switch on the operation switch to return the upper bending die to its original position.

Relationship between pressure and bending width in 90° bending process unit : Mpa (kg/cm²)

Material/width	50mm	100mm	150mm	200mm	250mm	300mm
SS400	6.9 (70)	13.2 (135)	19.1 (195)	21.6 (220)	25 (255)	28.9 (295)
SUS304	7.4 (75)	12.7 (130)	19.6 (200)	23.5 (240)	27.4 (280)	32.3 (330)

6. MAINTENANCE

6-1) Hydraulic oil / fluid

(a) Type

As a general rule, use genuine oil NHO-32 (1 liter).

In case of emergency, use high quality hydraulic oil (ISO standard 32Cst).

(b) Temperature

The proper operating temperature for hydraulic fluid is 55°C or lower. If the color of the temperature seal attached to the tank changes, the oil temperature has risen above 55° C. Stop working until the temperature drops to the proper level.

NORMAL Over 55° C

(c) Changing oil

The hydraulic fluid should be changed after 300 hours of operation or 3 months. The replacement procedure is as follows:

(1) With no pressure applied, unplug the power supply.

(2) Remove the coupler.

(3) Stand the pump upright with the tank side down.

(4) Turn the oil supply plug counterclockwise to loosen and remove it.

Be careful not to lose the O-ring.

(5) Put the oil supply port down and drain the hydraulic oil.

(6) Put in new hydraulic fluid. For the amount of oil, refer to "3-4) Checking the hydraulic oil".

(7) Turn the oil supply cap clockwise and screw it in.

Do not forget to install the O-ring. Do not forget to install the O-ring, and be careful not to over-tighten it, as it may damage the O-ring.

(8) Wipe off the oil from the oil supply port and the surrounding area.

Immediately after replacing the hydraulic fluid, air may enter the pump, and the operation may become unstable. In this case, bleed the air by referring to "6-4) Bleeding the pump".

6-2) Hose for high pressure

The high pressure hose will deteriorate after a long period of use, so it should be replaced every two years. When replacing the hose, use the genuine hose as a rule.
For urgent use, use a high pressure hose with a normal pressure of 34.3MPa (350kg/cm2) or higher (mounting screw is PT3/8). Use a hose with as large a bending radius as possible. (Minimum bending radius: 70mm)
When connecting the tapered pipe screw to the hose piping or to various valves and couplers, wrap a sealing tape around the screw and refer to the tapered screw tightening torque table below, taking care not to over-tighten.

NPT,PT size	Tightening torque N-m (kgf・m)
1/8	13 - 14 (1.3 - 1.4)
1/4	30 - 40 (3.0 - 4.0)
3/8	60 - 70 (6.0 - 7.0)
1/2	100 - 110 (10.0 - 11.0)

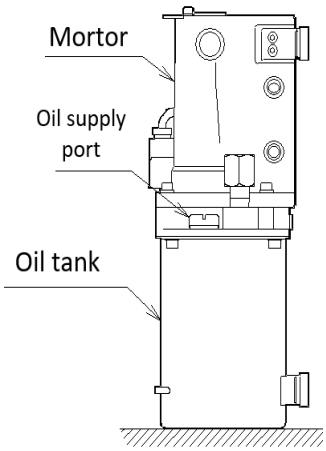
When replacing the tapered screw, be careful to remove all remaining sealing tape from the inside of the female screw to prevent it from entering the equipment or circuit. The same applies to the removed male screw.

6-3) Coupler

Use the genuine coupler. If any other coupler is used, oil will not be discharged.

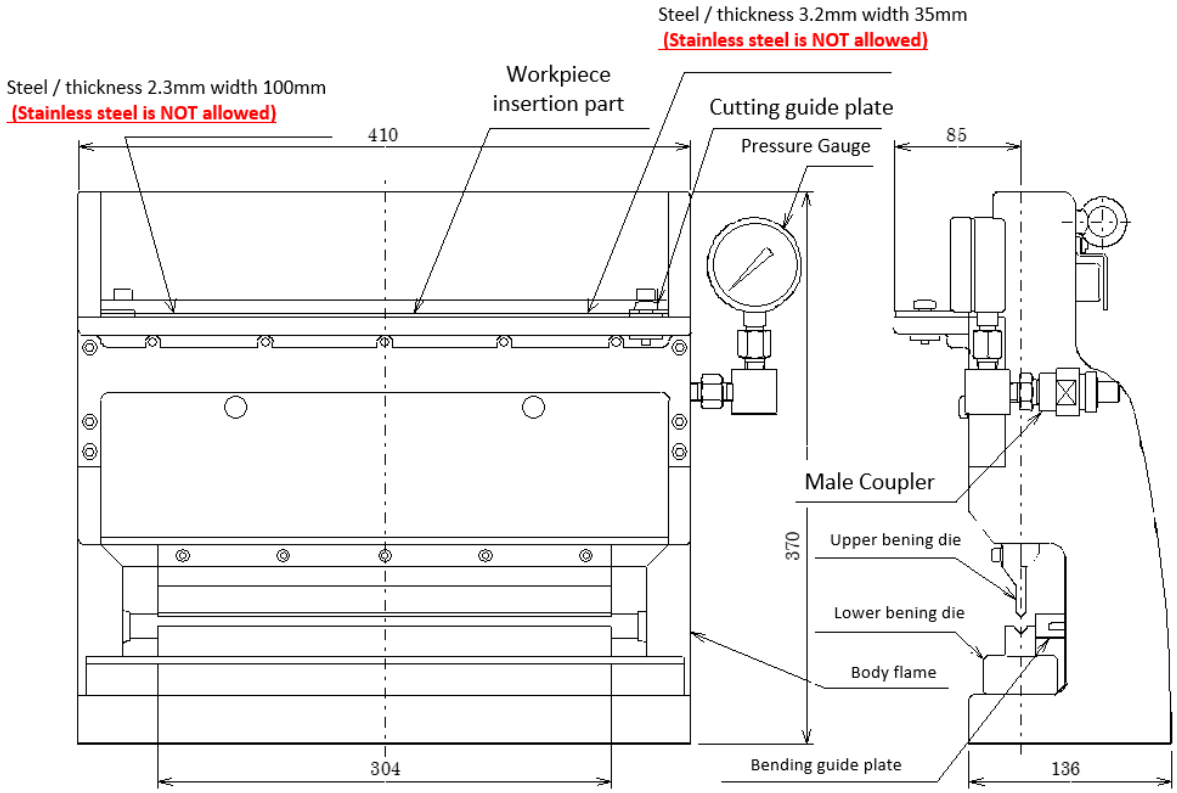
6-4) Bleeding the pump

Air may enter the pump after the hydraulic fluid and hose have been replaced, or when the pump is operated with insufficient hydraulic fluid. If this happens, the tool may not operate, or it may operate erratically, or the pressure may not increase. In this case, follow the procedure below to bleed the air.
(When removing the air, remove the coupler and use the pump alone.)
(1) Check the amount of oil.
For the method of checking, refer to "3-4) Checking the hydraulic oil".
(2) If the problem persists even after replenishing the hydraulic fluid, intermittently press A and B on the control switch for 2 to 3 minutes while the pump is standing.



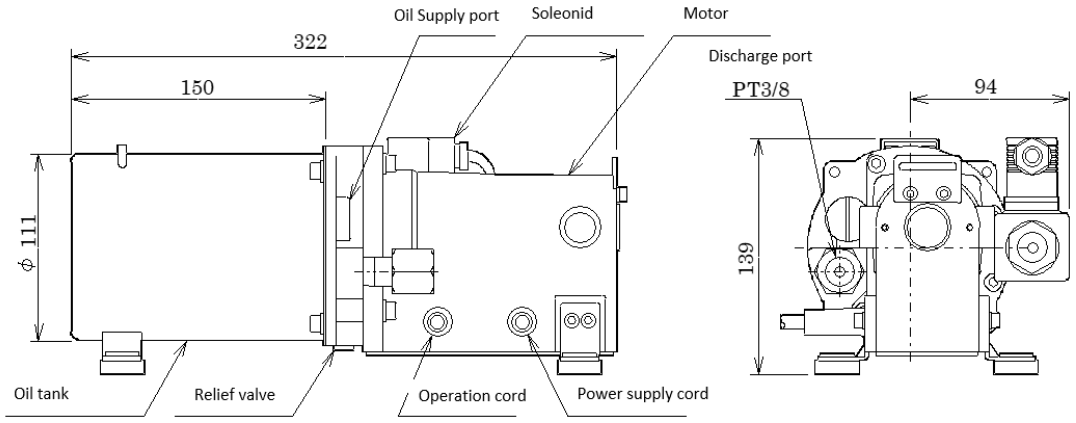
7. MAIN SPECIFIATIONS

CUT & BENDING MACHINE (CB-5)



	Cylinder			Flame	
Model	Output	Max pressure	Stroke	Size	Weight
	TON	**MPa (kgf/cm²)**	**mm**	**mm**	**kg**
CB-5	**5**	**34.3 (350)**	**10**	**410(W)x136(D)x370(H)**	**50**

Hydraulic pump (UP-35RH-CB)



Model	Motor (**50/60Hz**)				Pump capacity				Oil tank		重 量
	Insulation class Model	Voltage **(V)** **AC**	Motor **kw(HP)**	Rotation **rpm**	Max pressure **MPa (kgf/cm²)**		Discharge **l/min**		Amount	Effective 油量	**kg**
					High	Low	High	Low			
UP-35RH-PS	**E type**	**100** Single	**0.35** (**1/3**)	**2000**	**34.3** (**350**)	**0.98** (**10**)	**0.3**	**1.0**	**1.0**	**0.8**	**7.5**

●High pressure hose 1.5m included

●Operation: pressure holding and intermediate stop are possible (*stop on return is not possible).

●The oil tank is closed type, so it can be used in any direction.

8. TROUBLE SHOOTING

★ Motor does not run	1) No power supply 2) Cut off electric circuit 3) Defective pendant switch 4) Carbon brushes are worn down 5) Defective motor	1) & 2) Check line voltage 3) Replace defective parts 4) Replace when brushes are worn down to 6mm 5) Repair or replace
★ Abnormal noise of motor (slow rotation, roaring)	1) Voltage drop 2) Bad contact of electric circuit 3) Damage of mortor or pump	1) Remove causes of voltage drop 2) Check the line 3) Repair or replace
★ Motor runs, but tools does not work	1) Shortage of working oil 2) Air accumulated in system 3 Damage of pump (filter getting blocked, blocked, damage of solenoid valve or relief valve and others) 4 Damage of a cylinder 5 Damage or bad connection (looseness) of a quick coupler	1) Replenish oil 2) Remove air 3) Cleaning of filter, repair or replace 4) Repair or replace 5) Retighten or repair quick couplers

★ Tools work, but required process can not be done. Tools work, but it takes too many times	1) Voltage drop 2) Air accumulated in system 3) Damage of pump (filter getting blocked, of solenoid valve or replief valve and 4) Wear of tools 5) Over-capacity 6) Rise of oil temperature (over 55°C)	1) Remove causes of voltage drop 2) Remove air 3) Cleaning of filter, repair or replace 4) Repolishing or exchange 5) Check specifications 6) Remove causes or cool hydraulic oil
★ Upper dies does not retract, or slow retraction	1) Damage of slenoid valve 2) Bad connection (looseness) of a quick coupler 3) Damage of a pendant switch 4) Damage of a cylinder	1) repair or replace 2) Retighten or repait quick couplers 3) repair or replace 4) repair or replace
★ Oil leakage	1) Seal damage of pump, cylinder, quick coupler 2) Damage of hydraulic hose	1) replace damaged seals 2) replace hoses
★ Short circuit	1) damage of electric cord 2) Bad insulation of electrical components	1) replace damaged cords 2) Check electric components

9. WARRANTY

9-1) Warranty period

Within 365 days from the end of production month for general defect / failure.
i.e. If a customer purchase a pump on January 1, 2021, the warranty period is until January 31, 2022.

9-2) Warranty condition

All NITTOH products and parts, with the exception mentioned below, are warranted against defects in materials and workmanship, which results in damage to products and parts.

9-3 Warranty exceptions

No warranty claim will be accepted for damage or breakdown arising for any of the following reasons.

"Abuse or improper use, fair wear and tear, faulty or negligent operation, improper storage, chemical/ electrical influences or climatic or other effects which cannot be related specially to faults in manufacture"

No liability is accepted for packing seals, springs, and/ or the like, and the following:

◎ Alterations or remodeling on the products undertaken by the purchasers without any prior notice and agreement to NITTOH.
◎ Severe and very highly frequent use, deviating from product specifications.
◎ Damage due to faulty installation or assembly by purchasers or third parties.
◎ Damage from natural disaster.
◎ Damage from such accidents as fire, submersion, dropping, etc. Read and carefully follow these instructions. Most problems with new equipment are caused by improper operation or installation.