

MAR 2021



Hydraulic Breaker

*Operation Manual
& Parts List*

M SERIES

(MINI & SMALL RANGE)

MINI, 100M, 200M, 300M, 350M,
400M, 430M, 450M, 500M



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Preface

We totally appreciate your purchasing AJCE Hydraulic Breaker.

The Hydraulic Breaker, developed by AJCE's plentiful experiences and know-hows for many years, will satisfy customers under any working conditions with its highest power and long-time durability. However, without proper handling, regular inspection, the advanced demolition tool fails to display its excellent quality, resulting in various problems.

This operation manual shall be thoroughly read by customers before the first installation and operation in order to prevent any mishandling of hydraulic breakers.

We guarantee that a faithful understanding of the operation manual shall contribute to its best capacity.

If you have any further questions about operation of hydraulic breakers, please do not hesitate to contact local dealers or visit our website(www.ajce.co.kr) or email to info@ajce.co.kr.

We wish you a great success with us.



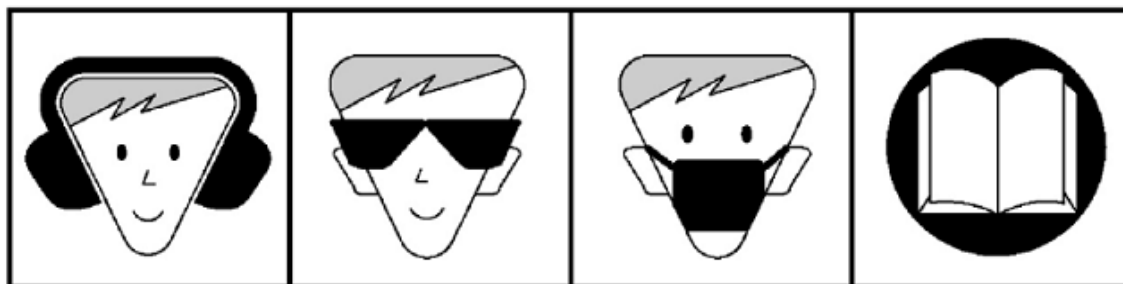
1. Safety Precautions

DO NOT OPERATE THE BREAKER UNLESS THE FOLLOWING SAFETY INSTRUCTIONS HAVE BEEN THOROUGHLY READ AND UNDERSTOOD.

READ THIS MANUAL BEFORE INSTALLING, OPERATING OR MAINTAINING THIS EQUIPMENT!

- Flying debris from the breaker, chisel, rock or other material may cause serious or fatal injury to the operator. Personal protection equipment must be used. Never operate the breaker when bystanders are in the work area.
- When operating the breaker, ear, eye, and breathing protection must be used at all times.
- The breaker will become very hot during the operation. Allow some time for the breaker to cool down before touching breaker parts.
- Operate the breaker in accordance with all laws and regulations which affect you, your equipment, and the work site.
- Know the limitation of your equipment.
- Do not operate the breaker unless thoroughly trained or under the supervision of an instructor.
- While learning about the breaker and the carrier, please do so at a slow pace. If necessary, set the carrier mode selector to slow working position.
- Make sure all control (levers and pedals) are in neutral position before starting the carrier.
- Stop the engine before attempting to make any repairs, adjustments, or servicing to either the carrier or the breaker.
- Do not operate the breaker at oil temperature above 175°F/80°C. Operation at higher temperatures can damage the internal components of the breaker and as well as the carriers, and result in low breaker performance.
- Do not operate the breaker in severe conditions such as, damage, leaking, improperly adjusted, or an incompletely assembled breaker.
- Do not operate this equipment if you are taking medication which may affect your mental judgment or physical performance.

■ Warning sticker





Hearing Protection

Eye Protection

Breathing
Protection

Read the manual
before use


■ Safety symbols

 DANGER	 WARNING	IMPORTANT
This safety symbol may appear on the breaker. It is used to alert the operator of an action that could place him/her or other in a life threatening situation.	This safety symbol appears in these instructions to identify an action that could cause bodily injury to the operator or other personnel.	This safety symbol appears in these instructions to identify an action or condition that could result in damage to the breaker or other equipment.

Safety symbols are to emphasize all operator, maintenance, and repair action, which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.

Always observe safety symbols. They are symbols for your safety.

■ Greasing sticker

GREASING	
	<ul style="list-style-type: none"> ■ <u>Grease every 2 hours and whenever chisel looks dry.</u> ■ When installing a new chisel, liberally coat the upper 1/3 of the chisel with grease before inserting. ■ Failure to comply with these instruction can result in damage to the breaker and will void the warranty.

2. Storage

IMPORTANT

■ Short term storage

1. Store breaker in dry and flat area. Rain or snow may cause a rust in the breaker.
2. Using your excavator, place the breaker horizontal on wooden pallet.
3. The breaker mount cap area shall be positioned higher than the chisel.
4. Remove the chisel and make sure the chisel pins, bushes are well greased.
5. Be sure that the hydraulic hoses are plugged to prevent dirty stuffs from getting into breaker.

■ Long term storage

1. Store breaker in dry and flat area. Rain or snow may cause a rust in the breaker.
2. Discharge N2 gas in back head.
3. Remove the chisel and push the piston up into cylinder. Otherwise, the piston bottom may get rusted.
4. Make sure the chisel pins, bushes are well greased.
5. Be sure that the hydraulic hoses are plugged to prevent dirty stuffs from getting into breaker.
6. Breaker must be stored in the vertical position. Otherwise, the breaker may cause oil leakage due to the seal damage.

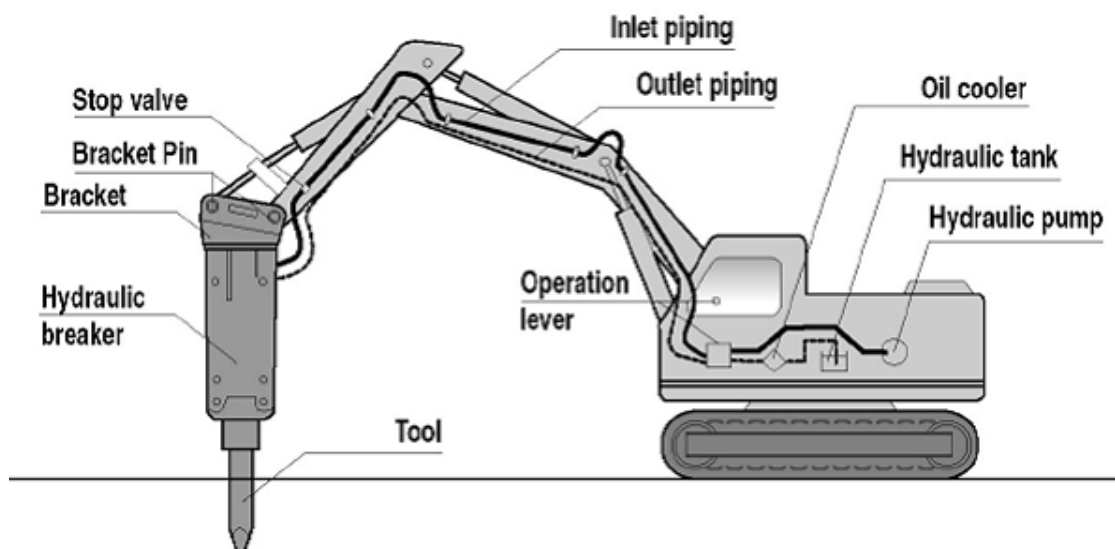
3. Preparation for Installation & Operation

(1) Checking instructions before installation

WARNING

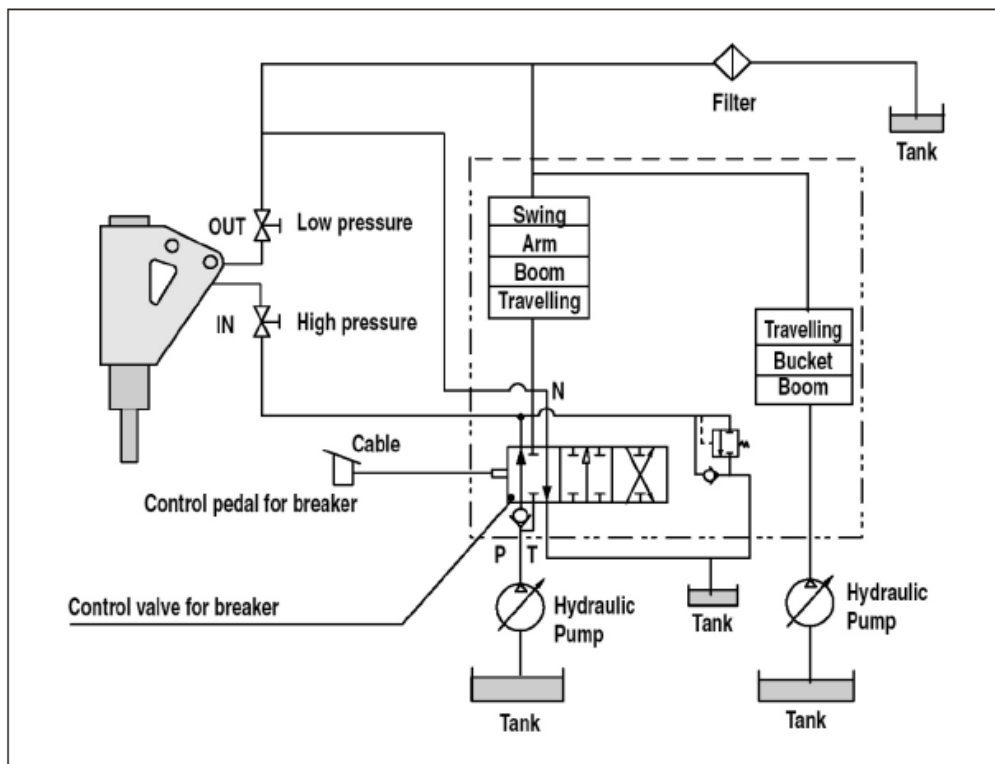
- Check the specifications to determine correct carrier sizes, hydraulic pressure, and hydraulic flow requirements.
- If the hydraulic pressure and hydraulic flow has exceeded, the breaker warranty is not applied.
- Check the N₂ gas in the back head and the accumulator.
- Be sure that the fluid in the hydraulic system is clean.
- Check the hydraulic filter. Replace the filter if dirty or deteriorating.
Hose and piping must be flushed.
- The contaminated part must be cleaned without delay.

(2) General view of breaker installed



(3) Hydraulic pipe lines for exclusive use

Operation of the hydraulic breaker requires installation of hydraulic pipe lines for exclusive use of the hydraulic breaker. As hydraulic pipe lines are depending on base machines, our service engineer must firstly check hydraulic pressure, oil capacity, pressure loss and other conditions. Use only genuine parts in case of replacement because hydraulic pipe lines(hoses, pipes and fittings) are made of materials carefully selected in consideration of durability.



IMPORTANT

The circuit relief setting pressure is not fixed. However, it will be adjusted by pump capacity.

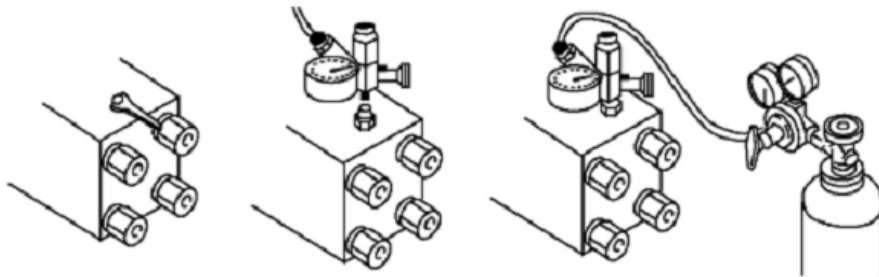
- Recommended back pressure is 10 kg/cm² for all AJCE hydraulic breakers.

(4) Inspecting and charging N₂ gas into the back head

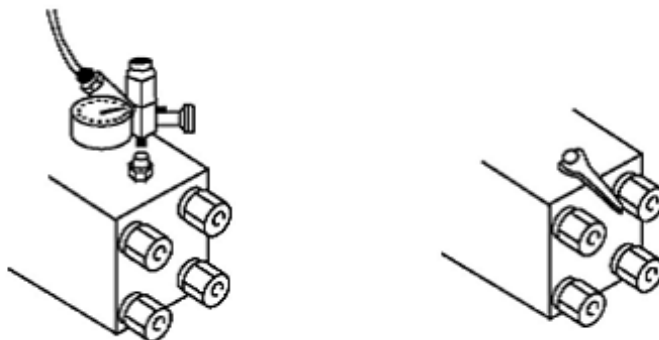
WARNING

- Lay down the breaker and let the chisel extend fully to charge gas.
- Stay clear of the chisel while charging the breaker with gas. The chisel may be impacted by the piston and forced out abruptly.
- Take care when the through bolts are changed or the breaker body is disassembled.
- Use special care to handle and store the N₂ cylinder as it is a High-pressurized container
- Use N₂ only.

■ Charging N₂ gas into the back head



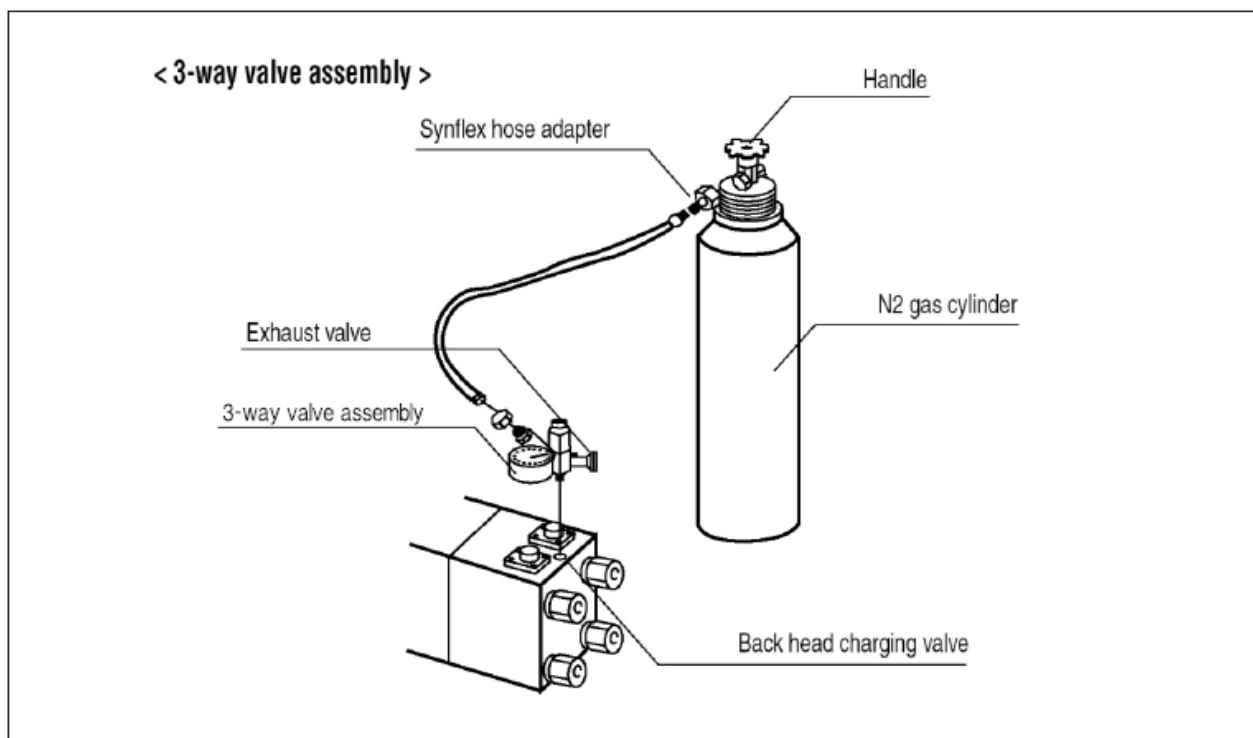
- ① Remove gas valve plug ② Insert 3-way valve with pressure gauge assembled ③ If gas is insufficient, adjust to specified valve as shown in the previous page



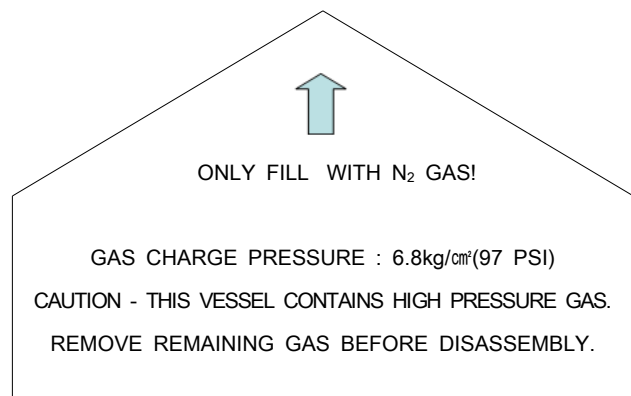
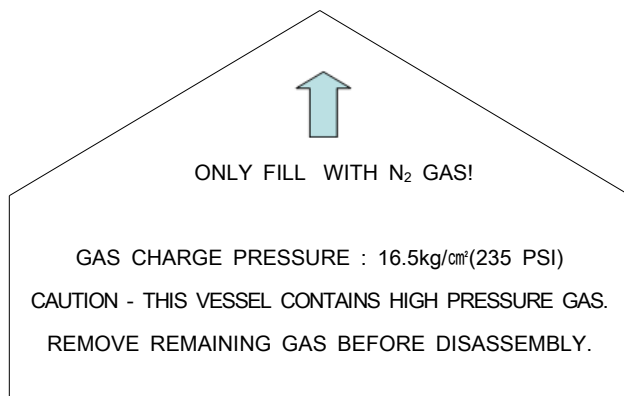
- ④ Adjust the pressure slowly by decreasing it through using the pressure gauge if gas is sufficient. ⑤ Tighten gas valve plug (Do not cut O-ring)

IMPORTANT

- Insert 3-way valve after its handle is fully turned counterclockwise.
- Turn the 3-way valve handle clockwise slowly. Stop turning it when the needle of the gauge starts to move. If it is turned clockwise too tightly, the valve may easily be damaged. Pay special attention to ensure that the nitrogen gas is not charged excessively.



- Back head sticker symbol
 - Appears on the back head charging valve



(5) Inspecting and charging N₂ gas into the accumulator

WARNING

- Use special care to handle and store the N₂ gas cylinder as it is a high pressurized container.
- Use N₂ gas only.

■ Inspection of N₂ gas pressure in the accumulator

- ① Remove the charging valve plug and tighten the charging valve fully.
(Ensure that O-rings are installed in the plug.)
- ② Remove the charging cap and install the charging adapter.
- ③ Install the charging kit to the adapter.
- ④ Loosen the valve gradually. The gas pressure is indicated on the gauge.
- ⑤ Close the valve when the gas pressure is normal. If the gas pressure is higher, repeat loosening and tightening the relief valve of charging kit.
- ⑥ Remove the N₂ charging kit and tighten the charging cap and plug.

■ Charging N₂ gas pressure into the accumulator

- ① Connect the charging hose to the N₂ charging kit and to the N₂ gas cylinder.
- ② Remove the charging valve plug and tighten the charging valve fully.
(Ensure that O-rings are installed in the plug.)
- ③ Remove the charging cap and install the charging adapter.
- ④ Install the charging kit to the adapter.
- ④ Loosen the valve gradually. The gas pressure is indicated on the gauge.
- ⑤ Turn the handle of the N₂ gas cylinder counter clockwise slowly to charge the gas.
- ⑥ Charge N₂ gas in accordance with the specification table.
- ⑦ Turn the handle of the N₂ gas cylinder clockwise to close.
- ⑧ Close the charging valve. If the gas pressure is higher, repeat loosening and tightening the relief valve of charging kit.
- ⑨ Remove the charging hose, N₂ charging kit, adapter and tighten the charging cap and plug.

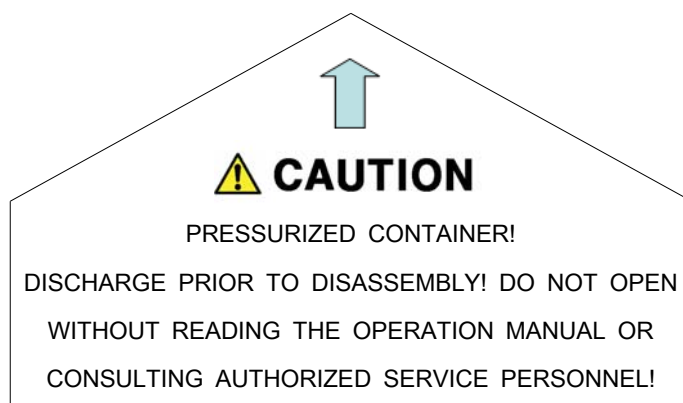
■ N₂ gas pressure into the accumulator

Accumulator gas pressure	Ambient Temperature(°C/°F)				
	0/32	10/50	20/68	30/86	40/104
kg/cm ²	50	52	55	58	61
psi	711	739	780	824	867

* Each specifications are shown in the accumulator sticker below.

■ Accumulator sticker(A) symbol

- Appears on the back head charging valve



■ Accumulator sticker(B) symbol

- Appears on the accumulator charging valve

Temperature(Max.)	80°C/175°F
Volume	0.78/1.33/1.48
Fill Material	Only N ₂ gas
Accumulator Precharge Pressure	55kg/cm ² , 780psi (at 20°C/68°F)

(6) Hydraulic oil

■ Recommended hydraulic oils and greases for hydraulic breakers by AJCE

SPEC Company	Hydraulic Oil			Grease
	Summer	Winter	All Season	(MOS2)
	ISO VG 46	ISO VG 32	ISO VG 46	NLGI No2
MOBIL	MOBIL DTE 25	MOBIL DTE 24	MOBIL DTE 15M	MOBIL GREASE SPECIAL
	MOBIL SHC 525*			MOBILTH SHC 220**
	MOBIL EAL SYNDRAULIC 46**			
LG-CALTEX	RANDO HD 46	RANDO HD 32	RANDO HD CZ	MOLYTEX EP2
BP	ENERGOL HP 46	ENERGOL HP 32	ENERGOL HP 46	-
SHELL	TELLUS 46	TELLUS 32	TELLUS T 46	RETINAX HDX-2

* : Synthetic Lubricant ** : Environmentally Friendly Synthetic Lubricant

■ Oil Contamination

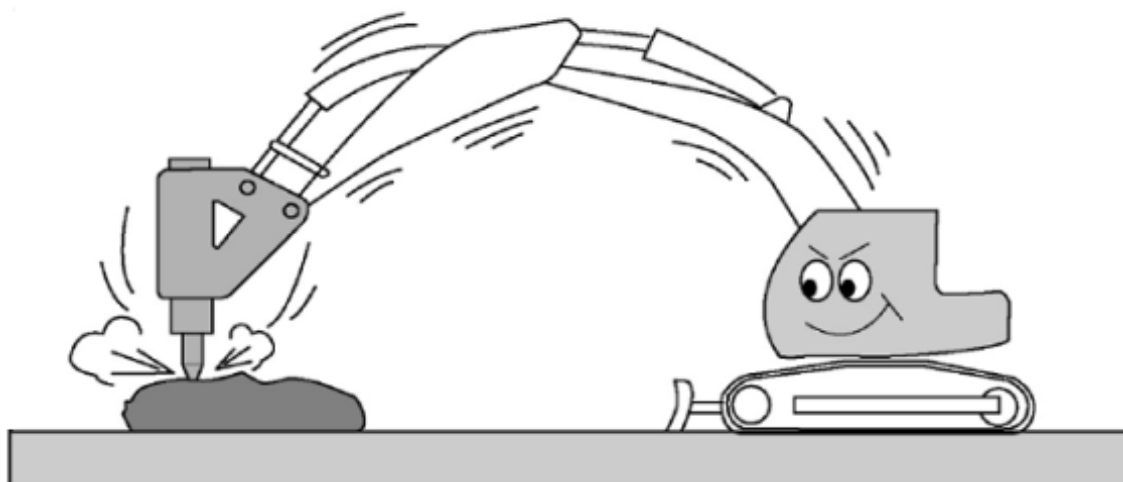
- Contaminated oil results in malfunctions of the breaker as well as the base machine and may cause damage to parts. Pay special attention to oil contamination. Contaminated oil should be changed without any delay. When changing oil, thoroughly wash oil tank, cylinder and pipes. Cleaning or replacing oil filter also requires check for oil contamination.
- Replacement of filter : after first 50 hours and every 100 hours thereafter
- Replacement of hydraulic oil : every 500 hours

■ Oil temperature

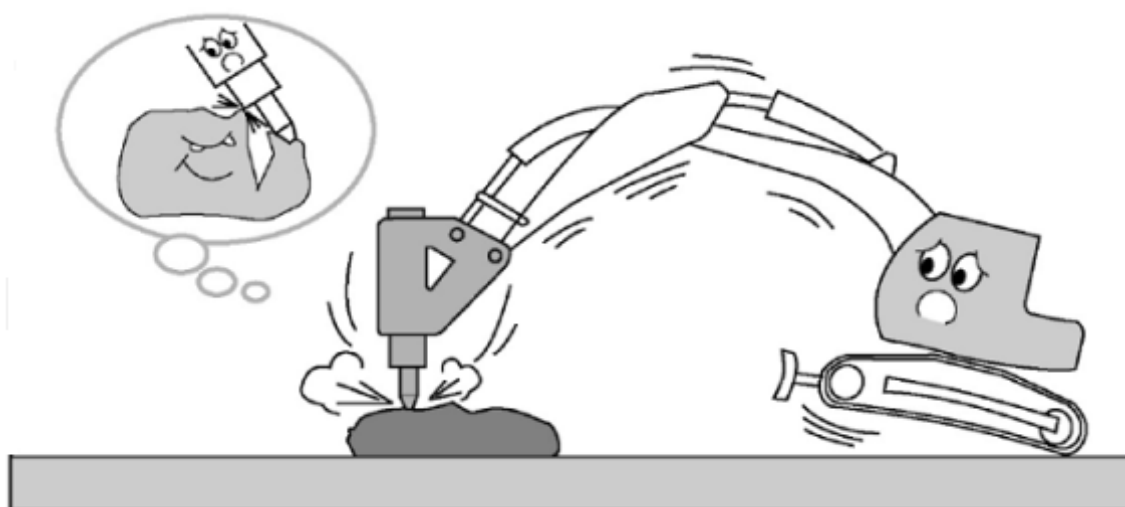
- The temperature of hydraulic oil shall not exceed 80°C/176°F. If higher temperature, oil cooler is to fitted.

4. Precautions for safe operation

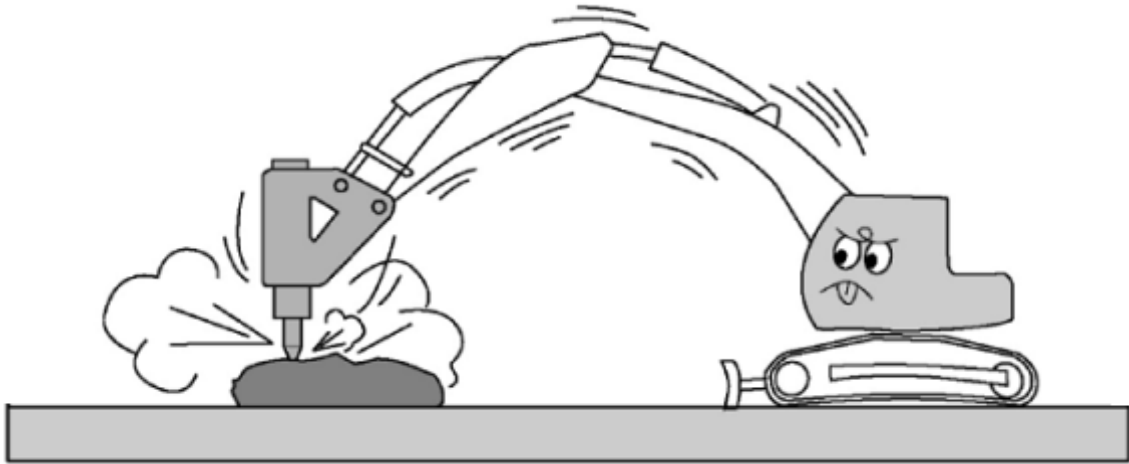
■ Proper position must be applied for an effective use of breaking force. When position is incorrect, the blowing energy of the piston is too weak to break rocks. Instead, blowing force applies shocks to the breaker body, chisel and boom of the base machine, thereby resulting in damage to those parts.



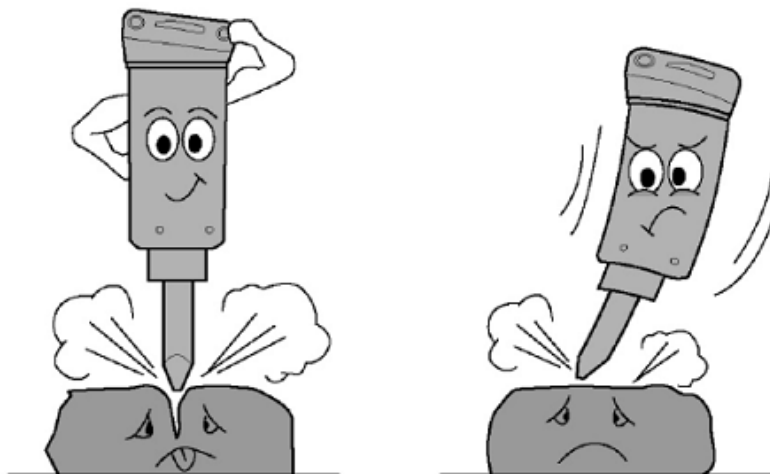
■ On the contrary, when position is excessive enough to break rocks with front of the base machine raised, the machine may suddenly tilt forward the moment rocks are broken then the breaker's body or the end of bracket may violently hit against rocks and result in damage.



■ It is undesirable to carry out hammering under the below condition, because vibrations during hammering may be transmitted to tracks of the base machine. During hammering, however, proper position must be always applied to the breaker. Special care must be taken not to hammer under abnormal condition.

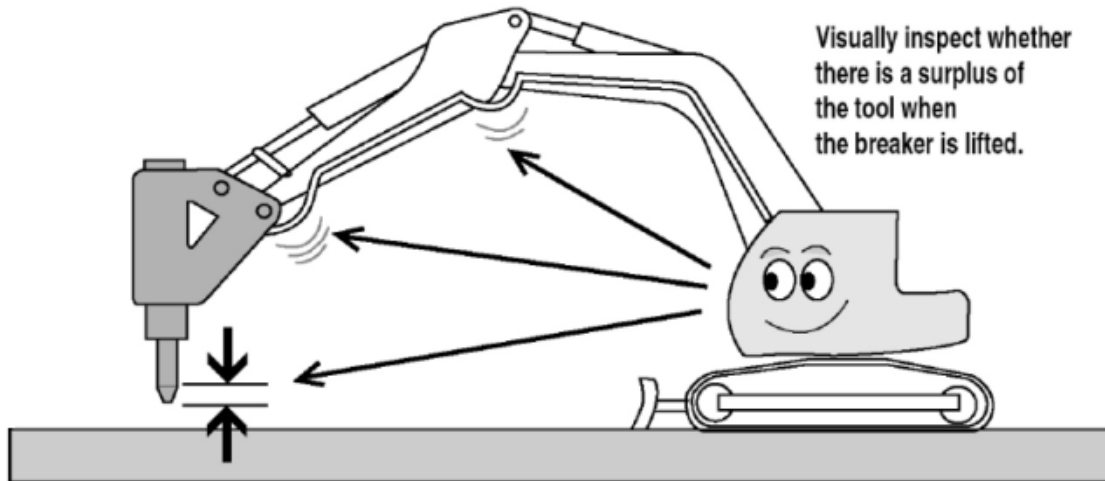


■ Apply same direction of boom force in line with the chisel, and place the chisel in the rock with hammering surface as vertical as possible. If hammering surface is oblique, the chisel may slip during hammering. This causes the chisel to seize and to be broken and piston to be damaged. When breaking, fully stabilize the chisel first and then select the point of the rock on which hammering can be performed in a stable condition.



■ **Stop operation as soon as hose vibrate excessively.**

Excessive vibration of high and low-pressure hoses of breaker calls for an instant disassembly and repair. Contact the nearest service station appointed by AJCE. For caution's sake, check oil leakage at the back head. The operator is required to pay attention to follow points during operation.



■ **Greasing**

With breaker mounted on carrier, apply down pressure on the chisel and fill the cavity with recommended grease through the grease nipple.

■ **When operating the breaker, you must use ear and body protection.**

You must use ear and breathing protection when the breaker is operating.

■ **Accumulator type - Danger**

Pay Attention to pressurized container! Do not open without reading the manual or consulting with the authorized service personnel.

■ **Do not touch chisel while breaker is working.**

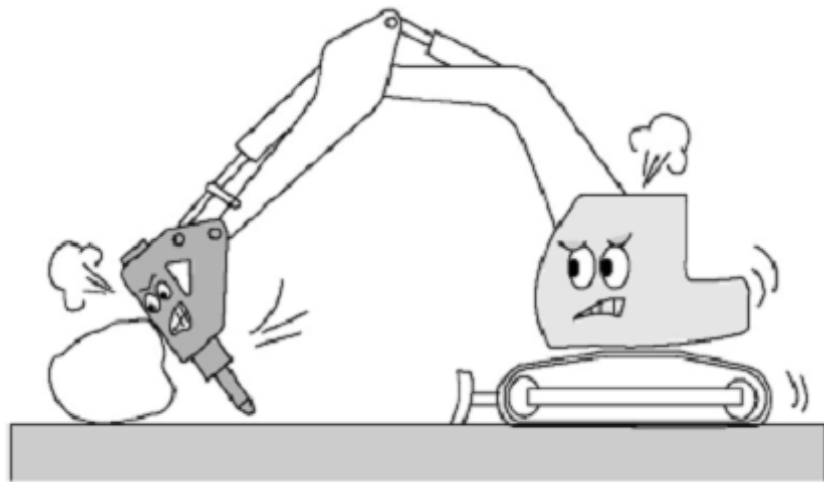
While the breaker is working, high temperature of the chisel will be generated.

■ **Do not continue to hammer for more than one minute.**

When rocks are not broken after more than one minute's hammering at the same point, change the place to be hammered. Extended hammering at the same place causes the chisel to wear out excessively.

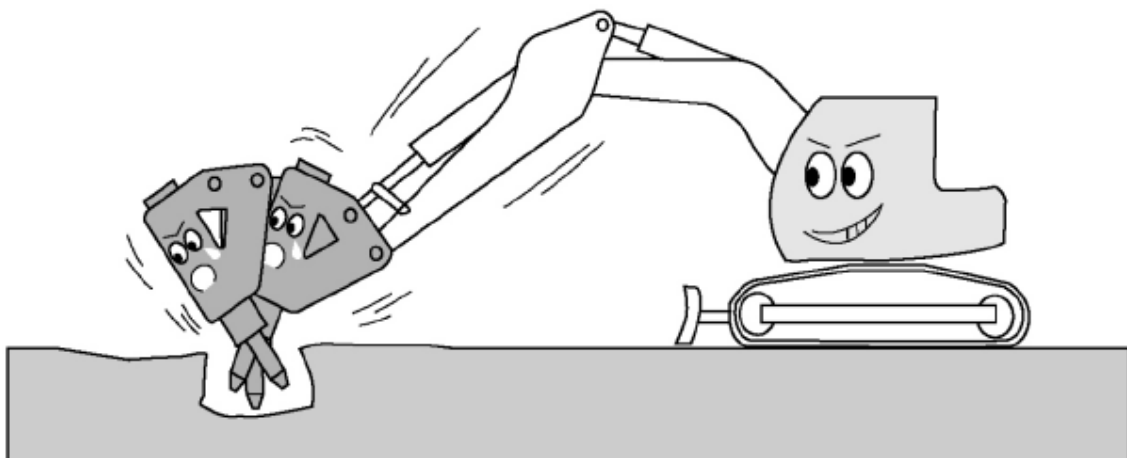
■ **Do not move rocks.**

Avoid moving rocks with the side of the bracket, because it is the major factor that causes broken bolts installed on the bracket, chisel and will damage the boom and the arm.



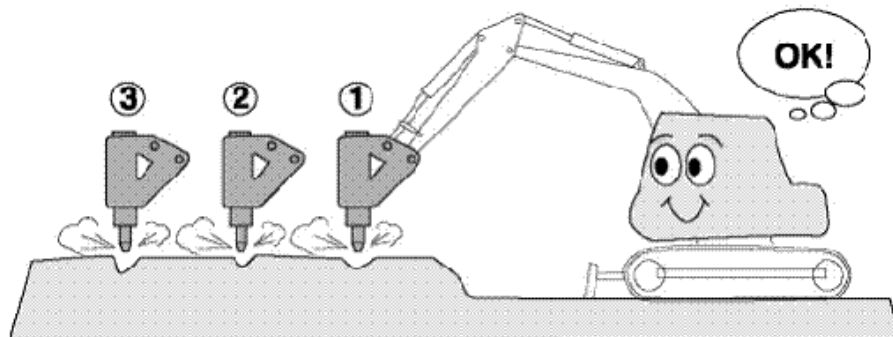
■ **Do not use chisel as a lever.**

When breaking rocks by using chisel as a lever, bolts and chisel may be broken, too.



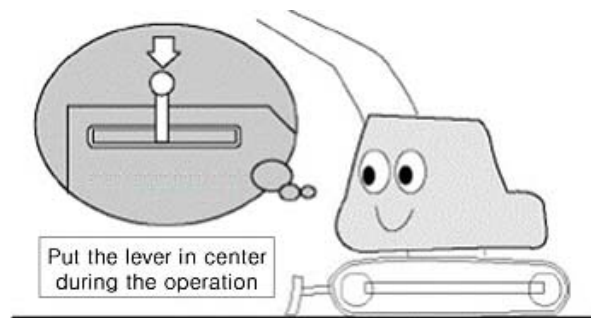
- On a hard and large rock, start breaking from the edge.

Even a hard and big rock can be easily broken when hammering begins at a crack or an edge.



- Operate breaker at proper engine speed.

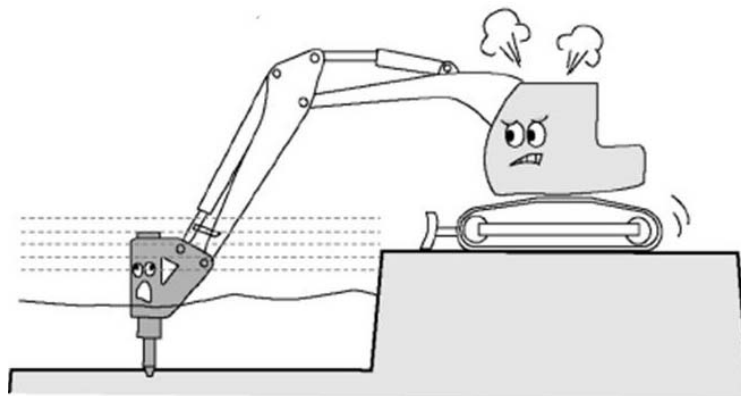
Break rocks at the specified engine speed. Raising engine speed more than necessary, does not strengthen hammering force but increases oil temperature to the detriment of pistons and valves.



- Do not operate the breaker in water and mud.

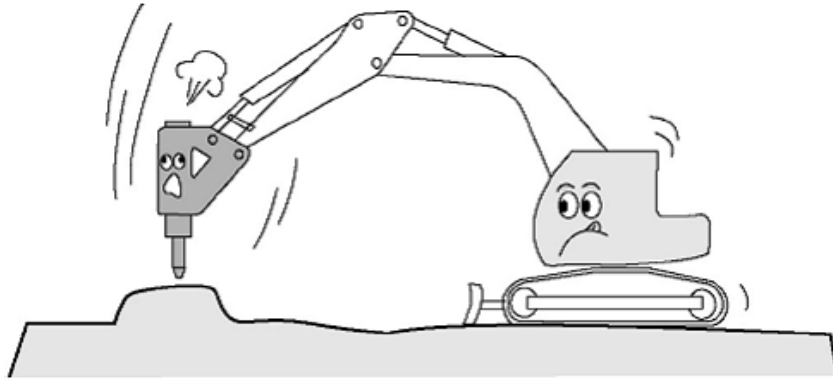
Do not operate the breaker when all components except chisel is immersed in water and mud.

Piston and similar components may gather rust and become a damaged breaker at an early stage.



■ **Do not allow the breaker to fall to break a rock.**

Falling down the breaker will apply excessive force in order to the breaker or the base machine, causing damage to many parts and the base machine.

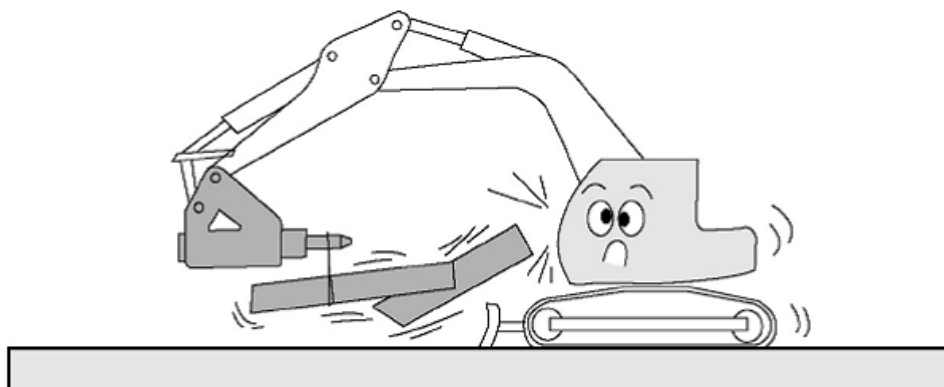


■ **Warm up base machine engine prior to operation.**

Especially in winter, the base machine engine should be warmed up for five to ten minutes 30°C~40°C(86°F~105°F) before breaker operation. Follow the instruction book for the base machine to warm up the engine.

■ **Do not lift things with the breaker.**

Lifting materials with a hanging wire in the bracket or chisel will not only cause damage to the breaker but also is very dangerous while operating.



IMPORTANT

Blank Firing

To understand "Blank Firing", the operator needs to be aware that if the chisel is not pressed against the work surface, the chisel will drop down in the lower body cavity far enough so that the piston cannot strike it. Blank firing occurs whenever the breaker is operating and the piston is not able to strike the chisel solidly or not strike the chisel at all. Blank firing accelerates wear and tear on breaker and excavator components and may result in failure of one or more components. Excessive blank firing may be considered equipment abuse and may result in voiding warranties.

Break-through or difficult surface contact results in blank firing when the material being broken fractures and the chisel is no longer in "hard contact" with the material but is still pushed high enough in the lower body cavity so that the piston can strike it. In this condition, the piston strikes the chisel and the chisel is driven against the tool pins because it is not in sufficient contact with the material to be broken. The energy is absorbed by the chisel pins, stop pins, front head chisel pin area, other breaker components, and the excavator boom components. Blank firing of this type can be experienced in trench work where obtaining striking contact with the work surface is difficult or the wrong chisel is used, or in flat rock work where the operator fails to stop operation of the breaker when slippage, fracturing or material break-through occurs.

Blank firing as a result of operator error occurs when the chisel is not in contact with the work surface to be broken and is allowed to drop down in the lower body cavity so that the piston is not able to strike it. Instead, the downward movement of the piston will be stopped by an internal oil cushion located at the bottom of the pistons's stroke and the energy of the piston will be absorbed by breaker components and excavator boom components. Blank firing of this type can be experienced when the operator fails to stop operation of the breaker when the material fractures or material break-through occurs, or during re-positioning of the breaker.

While blank firing cannot always be avoided, it can be kept to a minimum by avoiding the above conditions as much as possible.

5. Underwater Operation(Optional)

WARNING

- Underwater usage of the breaker without the underwater kit and air compressor will cause serious damage to the hydraulic breaker.

- The range of application : 500M ~ 1500M and 180F ~ 550F

- Underwater operation of the breaker is possible to pour air into the striking area between the piston and the chisel.

(1) Set up the underwater operating system

- Check where the air inlet of the breaker is before you equip the underwater operation system.
- Refer to the above the picture, and set up the underwater operation system.
- Assemble the underwater operation system into the breaker, and set an air hose on the equipment.

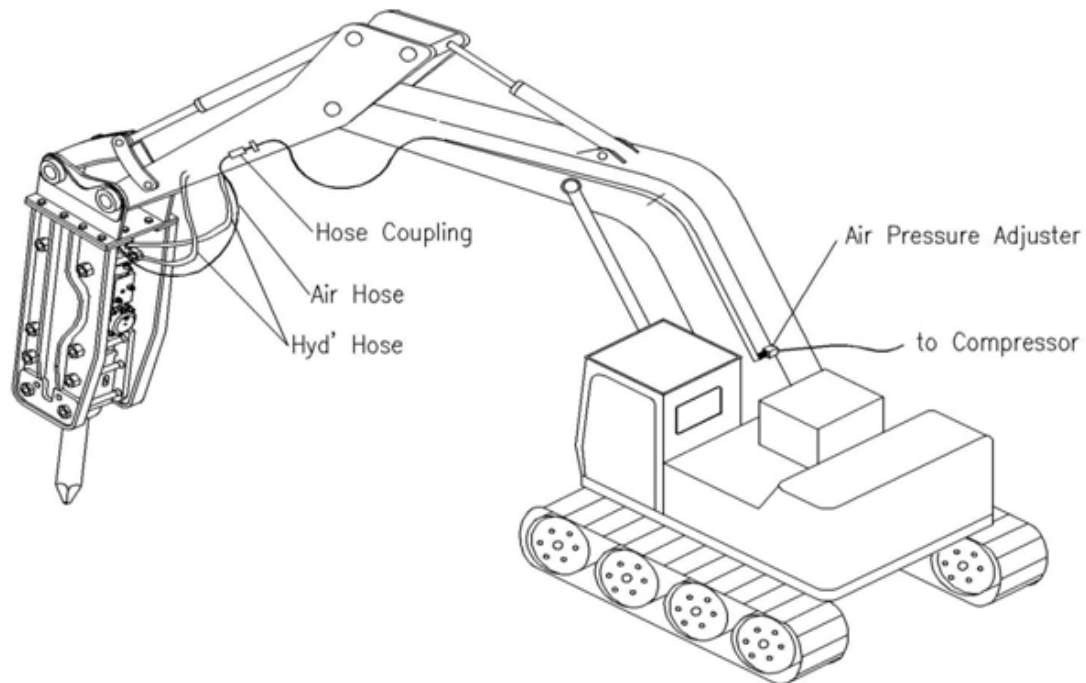
- Be careful that the hose should not be curved or bent.
- Set and fix the pressure adjustor where it can be seen very clearly from the driver seat.
- Remind that the hose connects to air compressor should not be interfered.

- The location of the hose coupling should be on the upper part of the arm of the machine and set and fix the metal part of the hose coupling on the equipment.

- When you set up the hose that connects to the air compressor, you can use a long bar to take down the hose to the ground from a distance from the machine. It can help preventing the hose from the damage which from the machine goes around.

- Remove the air vent from the back head of the breaker and connect the adapter to the air hose.

- Connect the pressure switch in series between the solenoid valve for the breaker operation and the breaker operation switch.



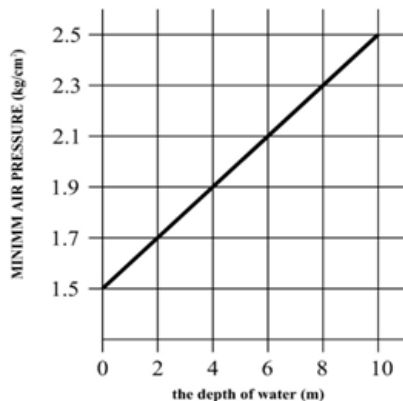
WARNING

- If the hose is curved and bent extremely when you set up the hose, it will cause that air cannot go and move around smoothly.
- be careful that the hose which connects the air compressor and the equipment should not be curved or bent by the equipment.
- If there is lack of the compressed air in the water, the breaker can be damaged seriously.

- Distribute the wires to operate the air compressor only when the breaker works.
- Turn on the air compressor and control the air pressure adjuster with checking the situation of compressed air in the breaker after installation.
- After finishing installation of the underwater operation system, turn on the air compressor and notice following instructions before you use the breaker.
- Check the situation of the hose connection once again before you start working in the water.
- Set up the compressed air

■ Generally, control the air valve adjuster to set up that pressure should be at least 1.5kg/cm higher than the water pressure which is the crushing site. In other words, the water pressure goes up 1kg/cm per 10m depth of water. Therefore, the minimum air pressure of the manometer can be calculated with next formula.

■ The minimum air pressure (kg/cm) =
$$\frac{\text{The depth of water of the crushing site(m)}}{10} + 1.5$$



■ Referring to the graph, calculate the minimum air pressure by the depth of water.

■ After turning on the air compressor, turn the handle of the air pressure adjuster to control the pressure not to go down under the minimum air pressure when breaker is blowing on the ground.

■ If the breaker is getting old, the gap of the chisel part will be getting bigger. In case of that, the amount of leakage air will be much, and the air pressure will not be made properly. If you face this problem, change a tool bush and a thrust bush of the breaker please.

■ Check the situation of the air hose connection every case during the working and the inspection. If the pressure of the manometer goes down under 0.5kg/cm², stop working immediately due to water can go into the inside of breaker's.

■ When you use the under water operation system, the period of the pouring grease related to the chisel should be 20 minutes or 30 minutes. The amount of the pouring grease should be doubled compare to regular work.

■ For the safety of the product and the efficiency of the work, use the auto-greasing system during the work under the water.

■ When you finish the breaker job, please pull the breaker out from the water as soon as possible. Even though the compressed air is supplied, the breaker can be rusted and earth and sand go into the breaker easily. As a result of that, the life of the breaker can be reduced.

■ After pulling the breaker out from the water, use the breaker over 10 minutes on the ground with the compressed air for removing and drying water which can remain at the striking room of the breaker.

■ After finishing all the work of the breaker, apply oil to the inside of striking room through the air inlet, and refill the grease.

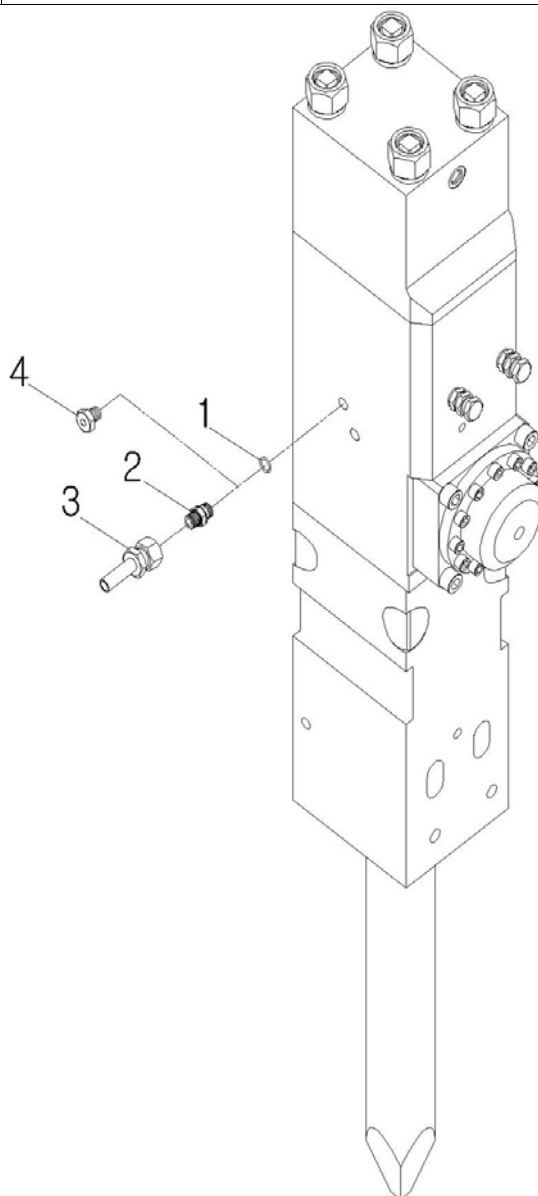
■ After long time of the work in the water or the regular period, disassemble the breaker, and check the all parts to keep the good condition. Replace the damaged parts and the rusted parts.

■ The frequent underwater work can reduce the life of the breaker seal. Please, check and replace the seal often compared to the regular period.

(2) Installing the underwater kit

- Clean the air check valve hole on the cylinder.
- Remove the air check valve with the standard tool.
- Apply the O-ring to the cylinder's air check valve hole and install it.
- Connect the hose to the air check valve hole and install it.
- Before underwater operation, the breaker get into water pouring air into air check valve.

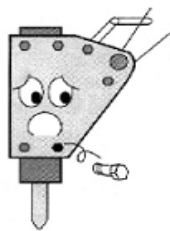
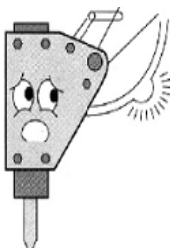
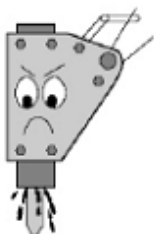
No.	Part name	Specification	Q'ty
1	O-ring	1BP18	1
2	Nipple	L50910	1
3	Hose	N/M	1
4	Air check valve	D10230	1


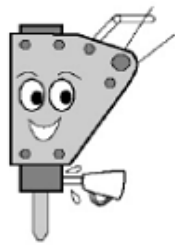
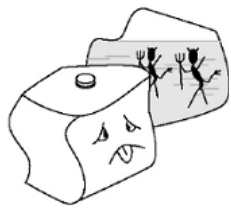
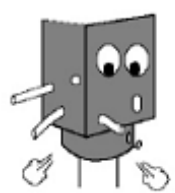


6. Maintenance

(1) Daily breaker inspection

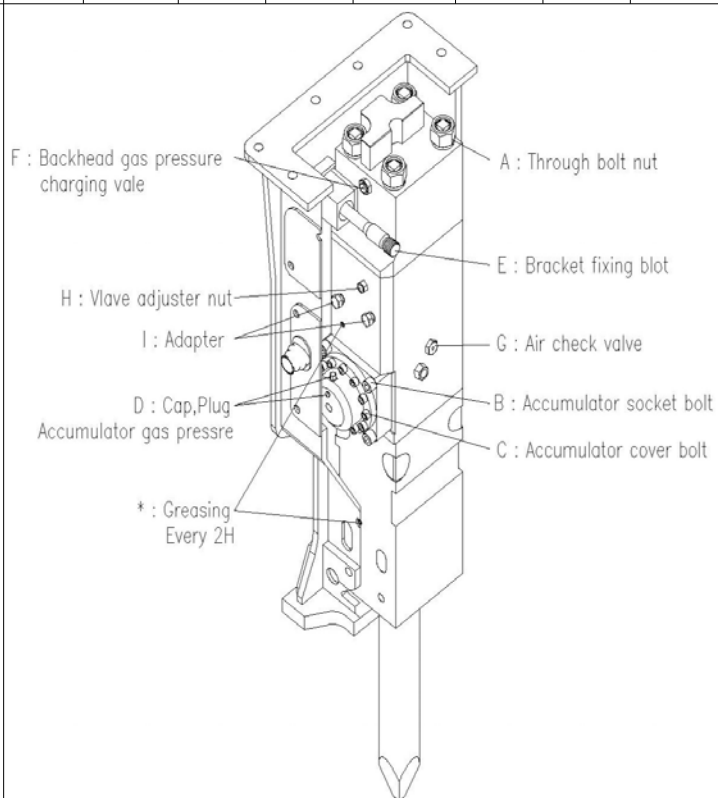
Before starting operation, be sure to inspect the breaker referring to the following table.

Inspection Item	Inspection Point	Remedy
<p>Looseness, missing and damaged bolts and nuts</p> 	<ul style="list-style-type: none"> ■ Through bolts ■ Bracket mounting bolts 	<ul style="list-style-type: none"> ■ Check looseness ■ Retighten securely
<p>Looseness of hose fittings, visible damage to hoses and oil leakage</p> 	<ul style="list-style-type: none"> ■ Hydraulic pipes for breaker oil hoses 	<ul style="list-style-type: none"> ■ Retighten securely ■ Replace seriously damaged parts
<p>Abnormal oil leakage</p> 	<ul style="list-style-type: none"> ■ Connections of back head and cylinder ■ Clearance between front head & tool (But small leakage is normal from front head) 	<ul style="list-style-type: none"> ■ Consult AJCE service station for further inspection

Inspection Item	Inspection Point	Remedy
<p>Abnormal wear and crack on tool</p> 	<ul style="list-style-type: none"> ■ Chisel 	<ul style="list-style-type: none"> ■ Deformed, burred and worn out chisel should be repaired. ■ Excessively worn out tool needs to be replaced.
<p>Greasing</p> 	<ul style="list-style-type: none"> ■ Grease at start every 2 ~ 3 hours using the grease pump. ■ Pump 5~10 times (Greasing position and method shown at left.) ■ When greasing, press the tool against the ground. 	<ul style="list-style-type: none"> ■ Grease front head
<p>Level and contamination of hydraulic oil</p> 	<ul style="list-style-type: none"> ■ Conditions of hydraulic Oil 	<ul style="list-style-type: none"> ■ Contamination of hydraulic oil carries with operating conditions. The oil color tells the level of contamination. ■ Criteria for judging contamination is specifically set by AJCE. ■ When contamination is excessive, drain and flush the hydraulic oil tank and fill it with a new oil.
<p>Missing rubber pulgs and snap rings</p> 	<ul style="list-style-type: none"> ■ Rubber plugs ■ Snap rings 	<ul style="list-style-type: none"> ■ A seriously damaged part must be replaced.

(2) Tightening Torque & Gas Pressure

Item \ Mode	Part	Unit	100M 200M	300M 350M	400M 430M	450M 500M	600M	710M	810M	1000M	1200M	1400M 1500M
Through bolt nut	A	kg. m	25~30	25~30 30~35	38~42 60~70	96~105 140~150	190~ 200	270~ 280	290~ 300	320~ 330	320~ 330	370~ 380
Accumulator body socket bolt	B	kg. m	-	-	-	-	-	-	60~65	60~65	60~65	90~95
Accumulator cover socket bolt	C	kg. m	-	-	-	-	-	-	45	45	45	45 65
Accumulator cap & plug	D	kg. m	-	-	-	-	-	-	15	15	15	15
Side fixing bolt	E	kg. m	60	80	100	145	200	250	250	250	350	350
Back head gas pressure	F	kg/cm ² (psi)	16.5 (235)	16.5 (235)	16.5 (235)	16.5 (235)	16.5 (235)	16.5 (235)	16.5 (235)	16.5 (235)	17.0 (242)	18.0 (256)
Accumulator gas pressure	D	kg/cm ² (psi)	-	-	-	-	-	-	55 (782)	55 (782)	58 (826)	60 (854)
Air check valve	G	kg. m	16~18	16~18	16~18	16~18	16~18	16~18	16~18	16~18	16~18	16~18
Valve adjust nut	H	-kg. m	-	-	-	-	25~30	30~35	30~35	30~35	35~40	35~40
Adapter	I	kg. m	16~18	16~18	16~18	24~26	32~35	32~35	32~35	35~40	35~40	35~40
Charging valve	F	kg. m	35~40	35~40	35~40	35~40	35~40	35~40	35~40	35~40	35~40	35~40
Hex head plug	J	kg. m	-	-	-	-	3~4	3~4	3~4	3~4	3~4	3~4
Greasing every 1hr using(manual)		cc	7	7	10	10 15	15	20	20	20	25	25



(3) Regular breaker inspection and maintenance

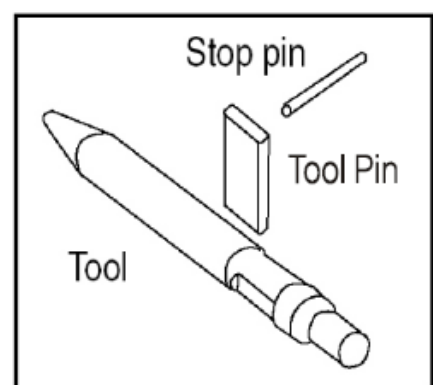
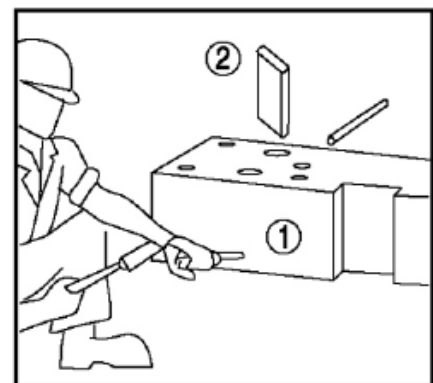
Regular inspection is essential for keeping the hydraulic breaker operating in its best condition. Consult the AJCE service station for a regular inspection and maintenance. Customers are recommended to contact the service station for inspection within six months after delivery.

(4) Replacement of chisel

Chisel is deformed of burrs produced in a long-term use. When the chisel's tip is worn out, chisel is liable to slip. Then, sharpen the chisel tip. Grinding the chisel tip many times to sharpen the edge will make the heat-treated hardened surface layer disappear and will wear out the chisel rapidly. In this case, replace with a new chisel. If the gap between the chisel and the lower bush becomes large, the piston will fail to fit into the chisel resulting to damage. When the gap is over 9mm, replace the upper bush together with the chisel.

■ Replacement Order

- Remove the snap-ring and the chisel pin in order with a 330mm-long steel bar. When reassembling, align groove in chisel to chisel pin hole and insert tool pin.
- Reverse disassembly procedures to install the replacement tool. Before installing a new chisel, check each part for wear, breakage, scores, etc. Remove burrs and swellings on each tool pin, apply a coat of grease to the movable and frictional areas of the chisel pin and chisel, and finally install the chisel. Excessively deformed chisel pins will make a difficult replacement of the chisel. Therefore, chisel pins are required to be checked every 100 to 150 hours of operation.
- If replacement chisel is not a genuine part, we do **NOT WARRANTY** the performance of the other parts of the breaker.



(5) Chisel claim judgment criteria




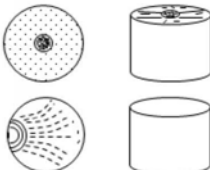
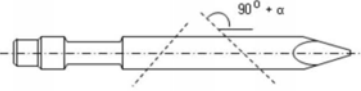

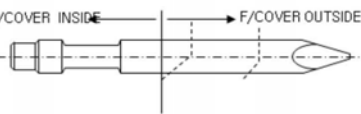

IMPORTANT

- For all chisel warranty, below pictures shall be given.
 - Picture of cylinder serial number and chisel serial number
(Chisel serial number is carved besides key area)
 - Picture with scale showing the total length of chisel
(If the chisel worn out over 100mm, it is out of warranty)
 - Picture for claim area

AJCE Chisels are manufactured through a process of strict manufacturing and quality control, from the receipt of materials through processing, heat-treatment to post-treatment. Chisel materials are well stored and managed as to enable quality record tracing throughout normal chisel life span, right from delivery.

However, apart from the chisel quality, chisel operating life may vary significantly according to operating conditions and methodology, or according to the type of material worked on, making it difficult to guarantee a standard operating life.

Hence, to help users use our products correctly, and ensure long operating life, these claim judgment criteria present defect examples that can occur during use, and the disposition standards applicable in various cases.

NO.	CUT OFF TYPE	CUT OFF FACE	WARRANTY	REASON FOR CUT OFF
1			NO	* OPERATOR FAULT * LACK OF GREASE * LEVERAGE WORK * EXCESSIVE WORK
2			YES	* MATERIAL PROBLEM
			NO	* OPERATOR FAULT * LACK OF GREASE * LEVERAGE WORK
3			NO	* OPERATOR FAULT * LEVERAGE WORK
4			YES (LOWER BUSH INSIDE)	* MATERIAL OR HEAT TREATMENT PROBLEM
			NO (LOWER BUSH OUTSIDE)	* OPERATOR FAULT * LEVERAGE WORK

7. Trouble Shooting Guide

(1) Problems in operation

If the breaker does not work or blow frequency and blow power get worse, check the arranging method. And then inspect according to the following order.

Symptom	Cause	Required action
No blow out	<ul style="list-style-type: none"> ■ Excessive back head gas pressure ■ Stop valve closed ■ Lack of hydraulic oil ■ Wrong adjustment of pressure reducing valve ■ Faulty hydraulic hose connection ■ Oil back head infection 	<ul style="list-style-type: none"> ■ Re-adjust N₂ gas pressure ■ Open stop valve ■ Fill hydraulic oil ■ Tighten or replace ■ Replace back head o-ring, or step seal of seal retainer
Low impact power	<ul style="list-style-type: none"> ■ Line leakage or blockage ■ Clogged tank return line filter ■ Lack of hydraulic oil ■ Hydraulic oil contamination, or heat deterioration ■ Poor main pump performance ■ Back head N₂ gas low ■ Low flow rate by mis-adjustment off low control pressure reduction valve ■ Chisel out of range for blowing position 	<ul style="list-style-type: none"> ■ Check lines ■ Wash filter, or replace ■ Fill hydraulic oil ■ Replace hydraulic oil, rinse tank and replace hydraulic oil inside lines ■ Call an authorized service man ■ Refill N₂ gas ■ Re-adjust reduction valve ■ Rush down Tool by excavator operation
Irregular impact	<ul style="list-style-type: none"> ■ Low accumulator gas pressure, of bad accumulator ■ Bad piston or valve sliding surface ■ Piston moves down/up to blank blow hammer chamber 	<ul style="list-style-type: none"> ■ Refill N₂ gas ■ Call an authorized service man. ■ Rush down tool by excavator operation
Gas leakage	<ul style="list-style-type: none"> ■ O-ring damage in related parts 	<ul style="list-style-type: none"> ■ Replace relevant O-ring
Oil leakage	<ul style="list-style-type: none"> ■ Cylinder seal kit worn 	<ul style="list-style-type: none"> ■ Replace seal kit

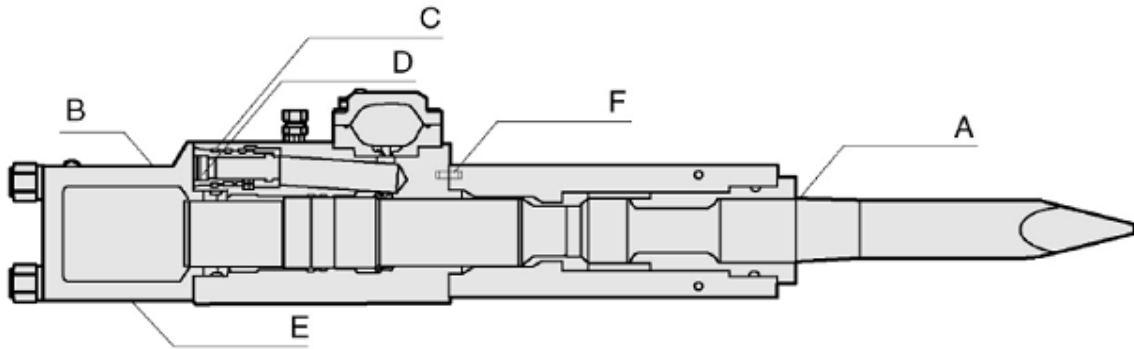
Pressure line vibration	<ul style="list-style-type: none"> ■ Accumulator gas leakage ■ Accumulator diaphragm damage 	<ul style="list-style-type: none"> ■ Replace o-ring, or refill N₂ gas ■ Replace diaphragm
Bad chisel movement	<ul style="list-style-type: none"> ■ Chisel diameter incorrect ■ Chisel jammed from chisel pin wear ■ Jammed lower bush and chisel <p>Deformed chisel and piston contact area</p>	<ul style="list-style-type: none"> ■ Replace chisel with genuine replacement parts ■ Smoothen rough surface of chisel ■ Smoothen rough surface of lower bush interior ■ Replace chisel

(2) Gas leakage

Trouble	Cause	Remedy
Gas leakage from the top of charging valve	<ul style="list-style-type: none"> ■ Defective or damaged charging valve 	<ul style="list-style-type: none"> ■ Repair or replace charging valve
Gas leakage between charging valve and back head	<ul style="list-style-type: none"> ■ Defective o-ring in charging valve ■ Charging valve loose in back head 	<ul style="list-style-type: none"> ■ Replace ■ Re-tighten
Gas leakage between cylinder and back head	<ul style="list-style-type: none"> ■ Defective o-ring in back head 	<ul style="list-style-type: none"> ■ Replace
Gas leakage from drain plug hole	<ul style="list-style-type: none"> ■ Defective gas seal in seal retainer ■ Defective step seal in seal retainer ■ Seizing of piston and seal retainer 	<ul style="list-style-type: none"> ■ Repair or replace seal retainer and piston

(3) Oil leakage

Even if oil is leaking, it is necessary to replace parts at all times. Check the following points listed in the chart below. The user can check the marked points before calling the dealer.

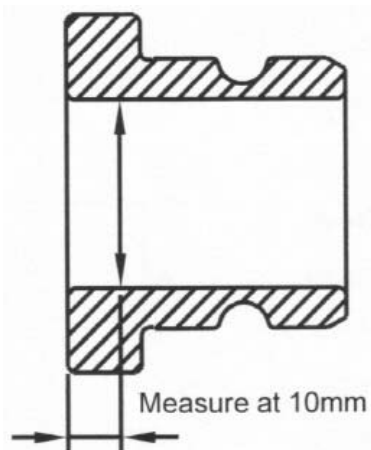
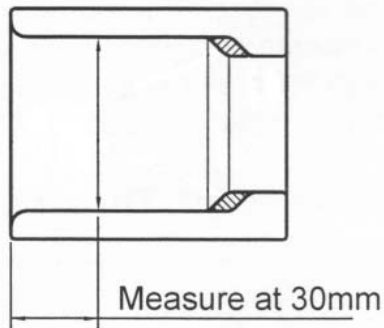


	Area of oil leakage	Condition	Causes & Remedies
A	Between the tool and lower bush	<ul style="list-style-type: none"> ■ A large amount of oil is leaking ■ Check if it is coming from oil or grease 	<ul style="list-style-type: none"> ■ Seals damaged ■ Replace
B	Surface of breaker	<ul style="list-style-type: none"> ■ Oil leaking from the hose and flange adapter portion 	<ul style="list-style-type: none"> ■ Loose breaker hoses and bolts ■ Retighten
C	Valve housing bolts and cap bolts	<ul style="list-style-type: none"> ■ Oil leakage from reassembly of valve after overhaul 	<ul style="list-style-type: none"> ■ During assembly from lubrication oil & anti-rust oil applied
D	Between main valve and surface of cylinder	<ul style="list-style-type: none"> ■ Oil leakage from reassembly of breaker after overhaul 	<ul style="list-style-type: none"> ■ Clean oil ■ Check that seal is damaged. ■ Loosen bolts ■ Replace with new seal
E	Between cylinder and back head	<ul style="list-style-type: none"> ■ Oil leakage ■ Oil leaks again 	<ul style="list-style-type: none"> ■ Loose tie rod nuts ■ Damaged O-ring ■ Retighten ■ Replace
F	Between cylinder and front head	<ul style="list-style-type: none"> ■ Oil is leaking 	<ul style="list-style-type: none"> ■ Loose plugs assembled on the surface of cylinder ■ Retighten ■ Replace damaged seals

8. Wear Tolerance

Wear tolerance of each kind expendable parts come to decide. The usage of exceeding the wear tolerance causes fatal damage to breaker. Prevent the damage through the regular inspection and exchange of expendable parts including seals and all kinds of bushes.

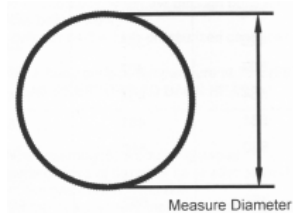
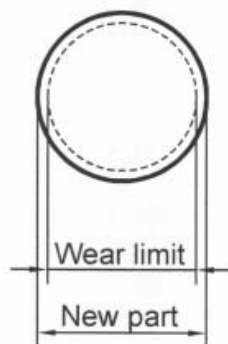
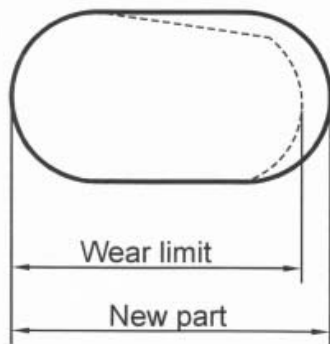
(1) Upper bush & Lower bush



Model	Inside diameter of New(mm/inch)	Inside diameter of Reject(mm/inch)
MINI	35(1.38)	37(1.46)
100M	40(1.57)	42(1.65)
200M	45(1.77)	47(1.85)
300M	53(2.09)	55(2.17)
350M	60(2.36)	62(2.44)
400M	68(2.68)	71(2.80)
430M	75(2.95)	78(3.07)
450M	85(3.35)	89(3.50)
500M	100(3.94)	105(4.13)
600M	125(4.92)	130(5.12)
710M	135(5.31)	140(5.51)
810M	140(5.51)	146(5.75)
1000M	150(5.91)	156(6.14)
1200M	155(6.10)	161(6.34)
1400M	165(6.50)	171(6.73)
1500M	175(6.89)	181(7.13)
180F	120(4.72)	125(4.92)
250F	135(5.31)	140(5.51)
350F	150(5.91)	156(6.14)
550F	180(7.09)	186(7.32)
550F	180	186
650F	190	196

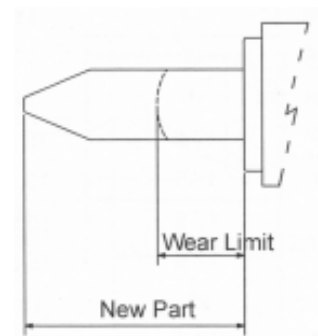
(2) Chisel pin & Stop pin & Bush pin

Model	Chisel pin		Stop pin		Bush pin	
	Length of New (mm/inch)	Length of Reject (mm/inch)	Outside diameter of New (mm/inch)	Outside diameter of Reject (mm/inch)	Outside diameter of New (mm/inch)	Outside diameter of Reject (mm/inch)
MINI	20(0.79)	18(0.71)	10(0.39)	8(0.31)	13(0.51)	11(0.43)
100M	28(1.10)	26(1.02)	10(0.39)	8(0.31)	13(0.51)	11(0.43)
200M	28(1.10)	26(1.02)	10(0.39)	8(0.31)	13(0.51)	11(0.43)
300M	32(1.26)	30(1.18)	10(0.39)	8(0.31)	13(0.51)	11(0.43)
350M	36(1.42)	34(1.34)	13(0.51)	11(0.43)	13(0.51)	11(0.43)
400M	38(1.50)	36(1.42)	16(0.63)	14(0.55)	16(0.63)	14(0.55)
430M	42(1.65)	40(1.57)	16(0.63)	14(0.55)	16(0.63)	14(0.55)
450M	54(2.13)	51(2.01)	17.5(0.69)	15.5(0.61)	20(0.79)	18(0.71)
500M	60(2.36)	57(2.24)	17.5(0.69)	15.5(0.61)	26(1.02)	24(0.94)
600M	75(2.95)	72(2.83)	17.5(0.69)	15.5(0.61)	26(1.02)	24(0.94)
710M	82(3.23)	79(3.11)	17.5(0.69)	15.5(0.61)	26(1.02)	24(0.94)
810M	88.5(3.48)	85.5(3.37)	20(0.79)	18(0.71)	30(1.18)	28(1.10)
1000M	94(3.70)	91(3.58)	17.5(0.69)	15.5(0.61)	26(1.02)	24(0.94)
1200M	96(3.80)	93(3.66)	17.5(0.69)	15.5(0.61)	26(1.02)	24(0.94)
1400M	96(3.80)	93(3.66)	17.5(0.69)	15.5(0.61)	26(1.02)	24(0.94)
1500M	99(3.90)	95(3.74)	26(1.02)	24(0.94)	36(1.42)	34(1.34)
180F	70(2.76)	67(2.64)	17.5(0.69)	15.5(0.61)	26(1.02)	24(0.94)
250F	80(3.15)	77(3.03)	20(0.79)	18(0.71)	30(1.18)	28(1.10)
350F	89(3.50)	86(3.39)	20(0.79)	18(0.71)	30(1.18)	28(1.10)
450F	101(3.98)	98(3.86)	25(0.98)	23(0.91)	36(1.42)	34(1.34)
550F	121(4.76)	118(4.65)	26(1.02)	24(0.94)	36(1.42)	34(1.34)
650F	102(4.02)	99(3.90)	26(1.02)	24(0.94)	36(1.42)	34(1.34)



(3) Chisel

Model	Length of New(mm/inch)	Length of Reject(mm/inch)
MINI	268(10.55)	150(5.91)
100M	297(11.69)	200(7.87)
200M	326(12.83)	200(7.87)
300M	330(12.99)	200(7.87)
350M	374(14.72)	200(7.87)
400M	425(16.73)	250(9.84)
430M	507(19.96)	250(9.84)
450M	564(22.20)	250(9.84)
500M	561(22.09)	250(9.84)
600M	650(25.59)	300(11.81)
710M	701(27.60)	350(13.78)
810M	762(30.00)	400(15.75)
1000M	854(33.62)	450(17.72)
1200M	913(35.94)	500(19.69)
1400M	952.5(37.50)	500(19.69)
1500M	918(36.14)	500(19.69)
180F	700(27.56)	350(13.78)
250F	765(30.12)	400(15.75)
350F	795(31.30)	450(17.72)
450F	910(35.83)	550(21.65)
550F	910	550
650F	1070	550



870(34.25)

1070(42.13)

(4) Seal & O-ring

Since hydraulic breaker operates at high-pressure and high-temperature, leakage or scratch could be occurred by friction, wear and breakage of seals. Considering pressure, temperature, viscosity of oil, a little leakage is accepted to be normal. But in case of abnormal leakage, replace as a new ones. Although the breaker is not operated in a long time, replace seals periodically to prevent rust, corrosion of oil and transformation of seals.

(5) Regular check and parts replacement recommendation

The below parts are to be regularly checked and to be replaced as following chart.

Part Name	Regular check	6 months 600 hours	12 months 1200 hours	18 months 1800 hours	24 months 2400 hours
Chisel pin◆	Weekly	●	●	●	●
Stop pin◆	Weekly		●		●
Bush pin◆	Monthly		●		●
Upper bush◆	Monthly		●		●
Lower bush◆	Monthly	●	●	●	●
Through bolt set◇	Weekly, Monthly		●		●
Side bolt set◇	Weekly		●		●
Bolt & nut◇◇	Weekly			●	
Diaphragm	-		●		●
Seals & O-rings	-		●		●
Dampers◆	Monthly		●		●
Snap rings	Weekly			●	
Rubber plugs	Weekly			●	

- Note :
1. Replace the parts by operating hours or months which comes first
 2. Stop using the breaker and replace the parts without delay if any crack or damage found during regular check
 3. ◆ : Replace the parts according to wear limit, page 34~37.
 4. ◇ : Tighten nuts immediately if any loosen found during regular check. Loosen nut may cause crack on thread area. It is recommended to tighten all nuts again by torque wrench or hammer wrench after 2 weeks or 20 hours operation from the first installation or replacement date of through bolt or side bolt.
 5. ◇◇ : Tighten bolts and nuts without delay if any loosen found during regular check. Loosen bolt or nut may cause oil leakage or breakage of bolt, nut and related parts.

9. Warranty Policy

(1) The Terms of Warranty

The Warranty provided by Supplier hereunder shall extend either by the date of Bill of Loading to Distributor or for the date of distributor's invoice for the Products to the buyer, whichever comes first. Distributor shall advise AJCE of the sales of the products to buyer either by facsimile or e-mail not later than **15 Days** after the date of sale. If not, AJCE shall settle the period of warranty have to be estimated by the date of Bill of Loading.

(2) The Contents of Warranty

■ All delivered products will be checked for defects, damage or missing parts to assure performance upon arrival. Distributor must inform AJCE with a written claim on any missing or damaged parts with detailed photo cuts and user's comment within **15 Days** after receipt of products or any failure was occurred. If not, AJCE will not take the responsibility on claim. Delivery Report and Warranty Claim Report are included in each Operation Manual supplied with each unit of Hydraulic Breaker.

■ Damage occurred by transportation shall be claimed by Distributor directly to the transportation company. AJCE will not warrant any damage that is occurred by incorrect or careless handling, excessive stress, normal wear and tear or similar cases not due to faults of AJCE.

■ **Warranty Claim Report has to include the following information**

- ① Model and Serial No. of the Hydraulic Breaker, Date of Delivery & Installation
(According to the designated form of "Delivery Report")
- ② Operating Hours & Detail of Defect
(According to the designated form of "Warranty Claim Report")
- ③ Detailed photos are necessary to study the claim by AJCE engineers.

(3) Warranty Compensation

■ Any defects found in workmanship and faulty material will be repaired by Distributor.

AJCE will reimburse to Distributor as follows;

- ① Spare parts on AJCE account
- ② Airfreight up to 10kgs
- ③ Otherwise, almost warranty spare parts shall be replaced or compensated under CFR Ocean basis
- ④ Other minor cost, including labor and local transport, to be supported by local distributor

■ Distributor will keep the damaged products at least for 1 Year for inspection, and analysis of AJCE engineers. Reimbursement will be decided within 7 Days after AJCE decision If any written **[Warranty Claim Report]** with photos is reported to AJCE. AJCE will make its best efforts to settle any claim made by distributor in a shortest time.

(4) The below-mentioned cause shall be excluded from the warranty service.

- Omission of **[Warranty Claim Report]**
- Elapsed time of warranty period or report period
- Operation faults, mistake, misuse by users
- Due to the misusing of unauthorized spare parts

(5) Warranty standard (months or working hours, whichever comes first)

Part name	Warranty period	No warranty case
Cylinder	12 months / 1,200 hours	<ul style="list-style-type: none"> ■ Scratch after 1 month or 100 hours. Scratch to be caused by contaminated oil, blank firing, horizontal hammering, excessive job, careless maintenance, wrong storage. ■ Piston horizontal crack after 1 month or 100 hours. Horizontal crack is to be caused by scratch.
Piston	12 months / 1,200 hours	
Front head	12 months / 1,200 hours	<ul style="list-style-type: none"> ■ Crack on chisel pin area after 3 months or 300 hours. This crack is to be caused by blank firing, non-genuine chisel, non-genuine chisel pin, broken chisel pin, broken stop pin. ■ Crack on lower bush area after 3 months or 300 hours. This crack is to be caused by broken lower bush, leverage job. ■ Crack on through bolt nut area after 3 months or 300 hours. This crack is to be caused by loosen nut.
Valves	12 months / 1,200 hours	<ul style="list-style-type: none"> ■ Scratch after 1 month or 100 hours.
Seal retainer	12 months / 1,200 hours	<ul style="list-style-type: none"> ■ Scratch after 1 month or 100 hours.
Accumulator cover Accumulator body	12 months / 1,200 hours	<ul style="list-style-type: none"> ■ Crack on accumulator body bolt area after 3 months or 300 hours. This crack is to be caused by loosen bolt.

Through bolt / nut Side bolt / nut	6 months / 600 hours	<ul style="list-style-type: none"> ■ Crack on thread area after 1 month or 100 hours. This is to be caused by loosen nut.
Dampers Side plates	6 months / 600 hours	<ul style="list-style-type: none"> ■ Exceed wear limit
Seal kit / O-rings	3 month / 300 hours	<ul style="list-style-type: none"> ■ Excessive oil pressure and oil flow from excavator
Diaphragm	3 months / 300 hours	<ul style="list-style-type: none"> ■ Damage on the center area. This problem is to be caused by hammering at one spot for over 30 seconds although the chisel doesn't go down.
Upper bush Lower bush	3 months / 300 hours	<ul style="list-style-type: none"> ■ Exceed wear limit
Chisel pin	3 months / 300 hours	<ul style="list-style-type: none"> ■ Exceed wear limit ■ Crack on stop pin hole area. This crack is to be caused by broken stop pin ■ Blank firing, non-genuine chisel
Stop pin / Bush pin	3 month / 300 hours	<ul style="list-style-type: none"> ■ Exceed wear limit ■ Blank firing, non-genuine chisel, non-genuine chisel pin
Bracket Mount cap Mount pin bush	3 month / 300 hours	<ul style="list-style-type: none"> ■ Damage caused by outside force □ Welding crack is to be repaired in local
Chisel	Follow [Chisel claim judgment criteria] on page 27	

Delivery & Installation Report

Document No.: _____

Date: _____

Distributor	Company Name :	
	Address & Tel. :	
Customer	Company Name :	
	Address & Tel. :	
Excavator Model	Manufacturer :	Year of Mfg. :
	Total weight : tons	Operating hours : hours
Breaker Model	Model :	Serial No. :
	Oil Pressure : bar (psi)	Oil Flow : l/min (g/min)
Warranty Start :		Expiry Date :
Remarks		
<p>I hereby acknowledge that the subject was delivered in satisfactory condition and operates properly, and that I received the operation manual and instructions of its proper operation, preventive maintenance, and that all aspects of the standard warranty have been fully explained to me.</p>		
Delivery Acceptance	Customer :	
	Dealer :	



Warranty Claim Report

Document No.: _____

Date: _____

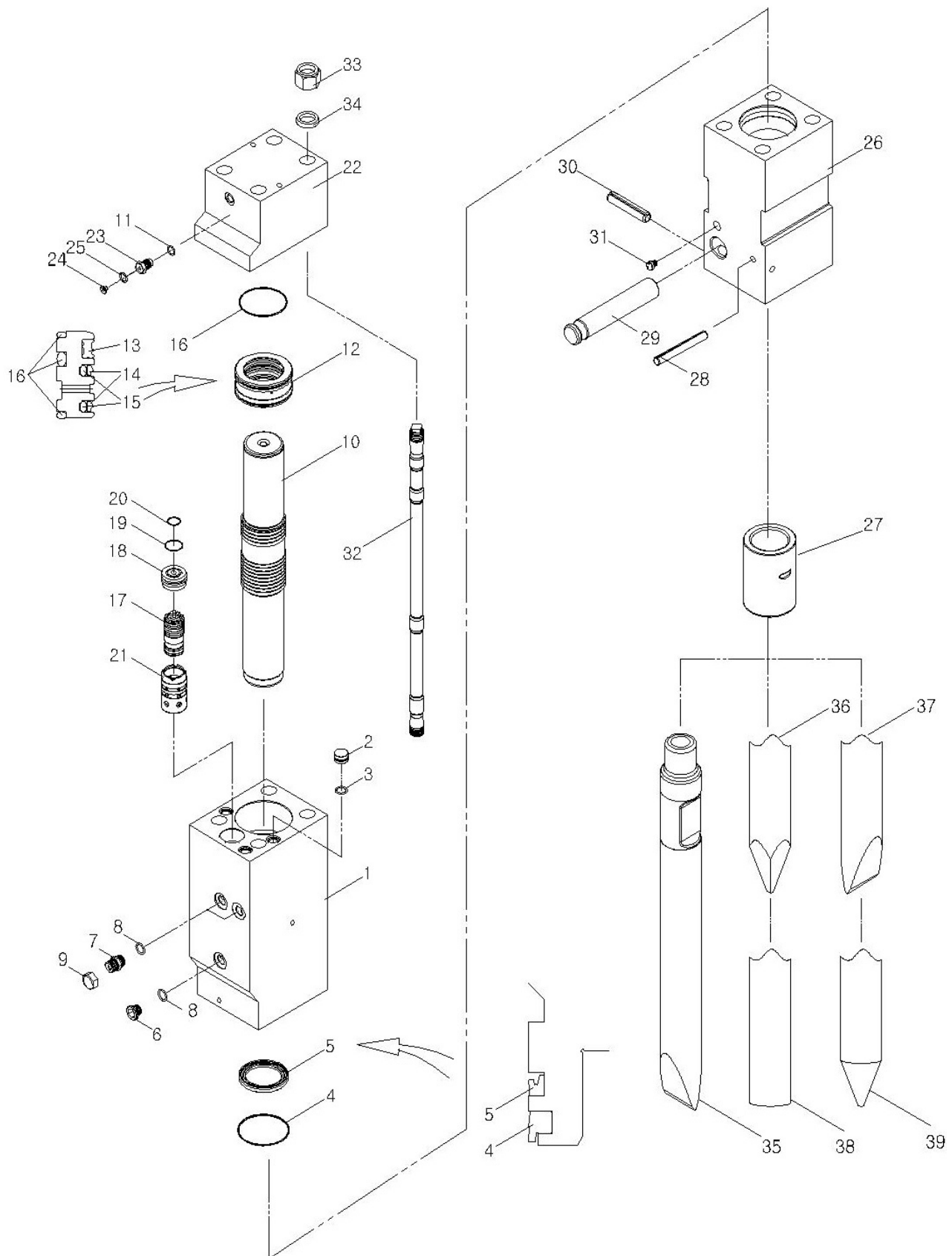
Customer	Company Name :	
	Address & Tel. :	
Excavator	Model :	Year of Mfg. :
AJCE Breaker	Model :	Serial No. :
	Installation Date :	Operating Hours : hours

Description

* Details photos shall be provided to AJCE within 15 days from the claim date.
Otherwise, the claim is not accepted.

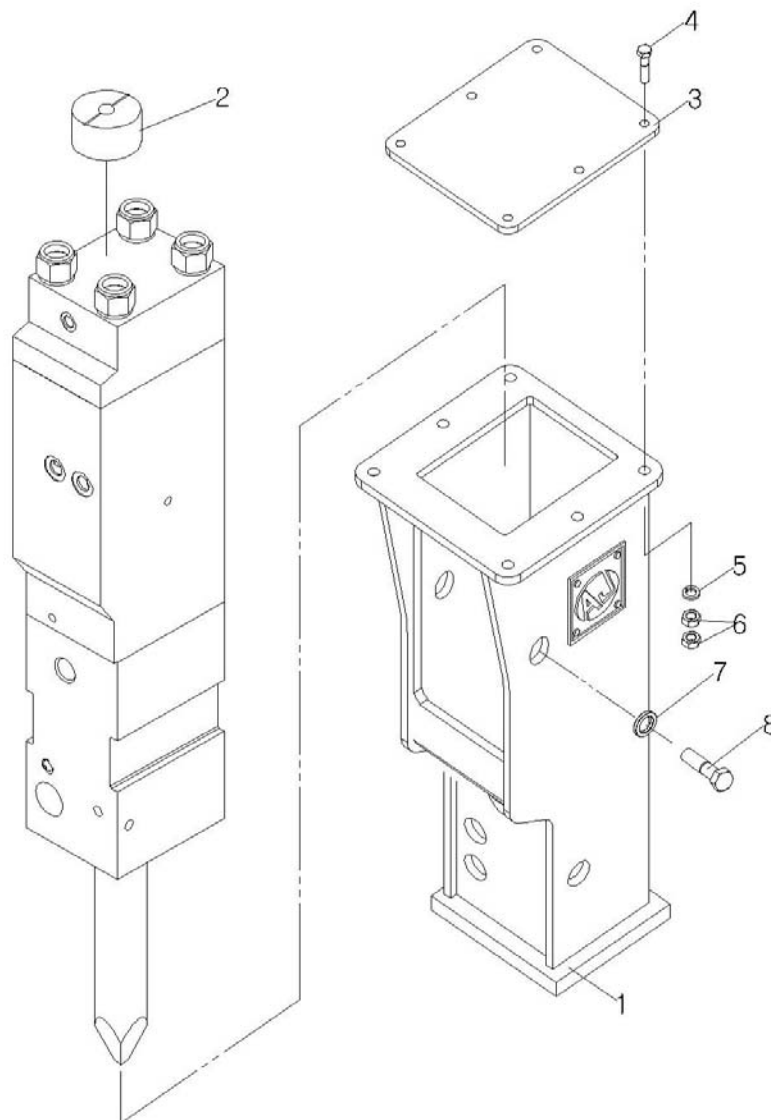


MINI MAIN BODY



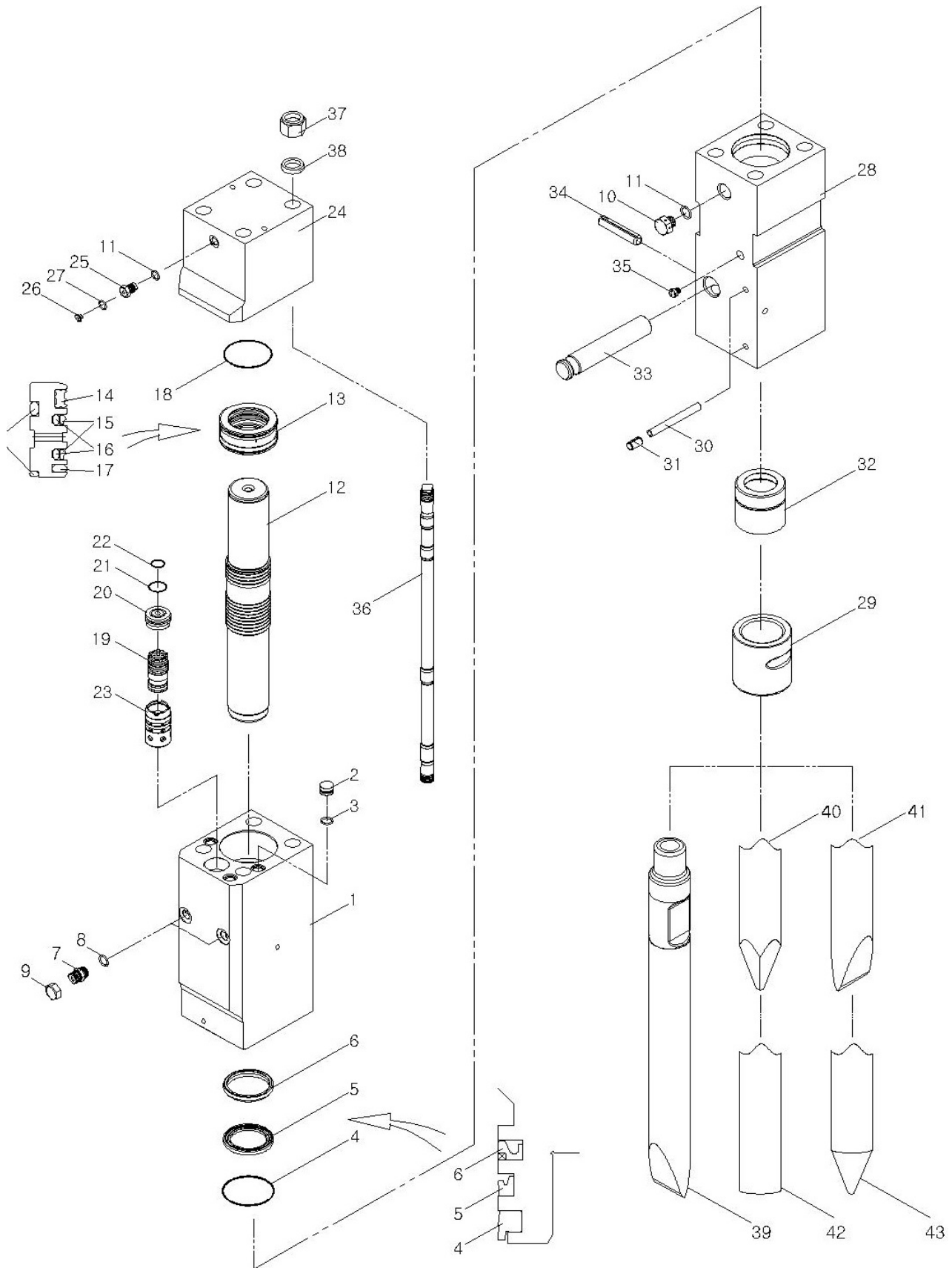
NO	PART NO.	PART NAME	QTY	REMARKS
-	A07100	MAIN BODY	1	1~34
-	N07100	SEAL KIT	1	
-	A07110	CYLINDER ASSY	1	1~21
1	B07110	CYLINDER	1	
2	D10210	TEFLON PLUG	3	
3	1BP11	O-RING	3	
4	DSI40	DUST SEAL	1	
5	ISI40	U-PACKING	1	
6	D45210	SOCKET PLUG	1	
7	D10110	IN/OUT ADAPTER	2	
8	1BP20	O-RING	3	
9	D10150	ADAPTER CAP	2	
10	D07230	PISTON	1	
11	1BP18	O-RING	1	
-	A07130	SEAL RETAINER ASSY	1	12~16
12	B07130	SEAL RETAINER	1	
13	GAS37	GAS SEAL	1	
14	STP37	STEP SEAL	2	
15	568223	O-RING	2	
16	1BG55	O-RING	4	
-	A07300	VALVE ASSY	1	17~21
17	B07340	VALVE	1	
18	B070350	VALVE PLUG	1	
19	1BP25	O-RING	1	
20	1BP15	O-RING	1	
21	B07360	VALVE SLEEVE	1	
22	B07610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	11,23~25
23	D10641	GAS CHARGING VALVE	1	
24	D10642	GAS CHARGING VALVE PLUG	1	
25	1BP16	O-RING	1	
-	A07500	FRONT HEAD ASSY	1	26~31
26	B07510	FRONT HEAD	1	
27	C07530	BUSH	1	
28	SP1380	SPRING PIN	1	
29	C07540	CHISEL PIN	1	
30	SP1080	SPRING PIN	1	
31	D10590	GREASE NIPPLE	1	
-	A07700	THROUGH BOLT ASSY	4	32~34
32	C07710	THROUGH BOLT	4	
33	C07720	THROUGH BOLT TOP NUT	4	
34	C07740	THROUGH BOLT WASHER	4	
35	K07100	H-WEDGE CHISEL	1	
36	K07200	MOIL POINT	1	
37	K07300	V-WEDGE CHISEL	1	
38	K07500	BLUNT CHISEL	1	
39	K07600	CONE CHISEL	1	

MINI (BOX)



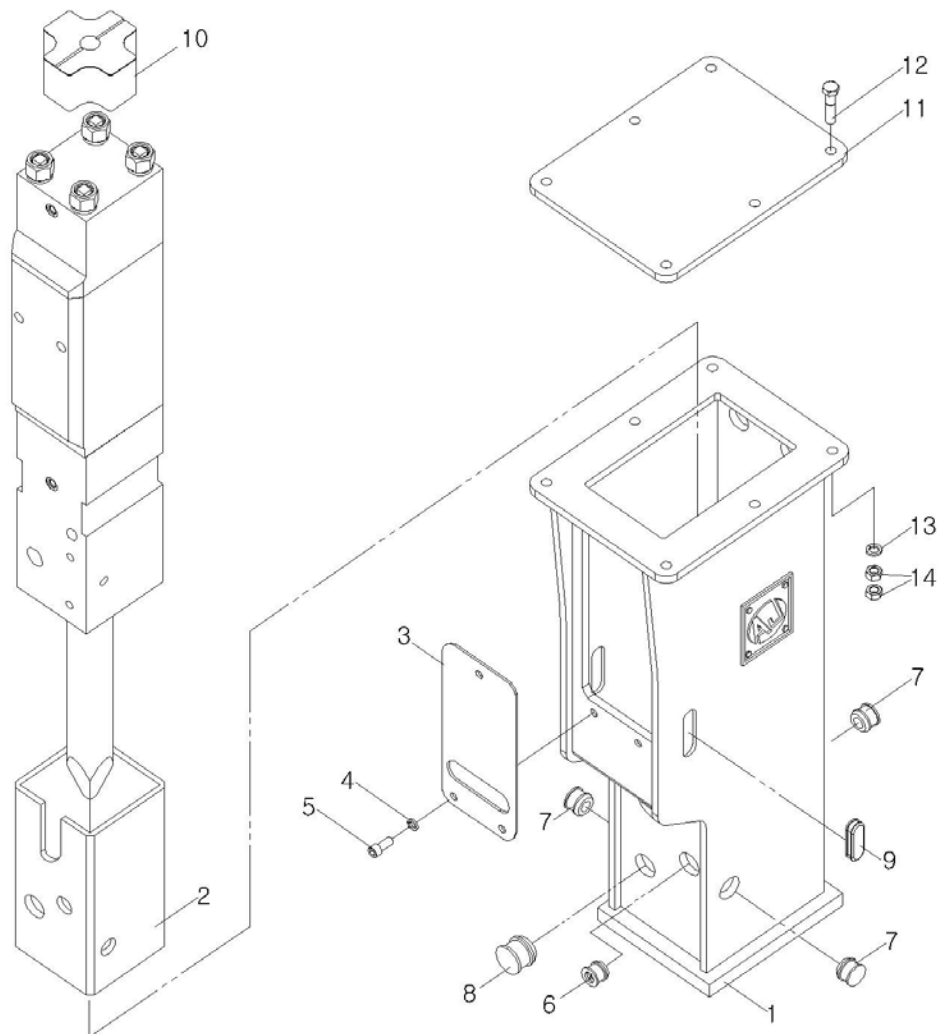
NO	PART NO.	PART NAME	QTY	REMARKS
1	F07110	BOX BRACKET	1	
2	F07920	UPPER DAMPER	1	
3	F10320	UPPER PLATE	1	
4	HB202580	HEX BOLT	6	
5	SW20	SPRING WASHER	6	
6	HN2025	HEX NUT	12	
7	SW16	SPRING WASHER	2	
8	WB161540	WRENCH BOLT	2	

100M MAIN BODY



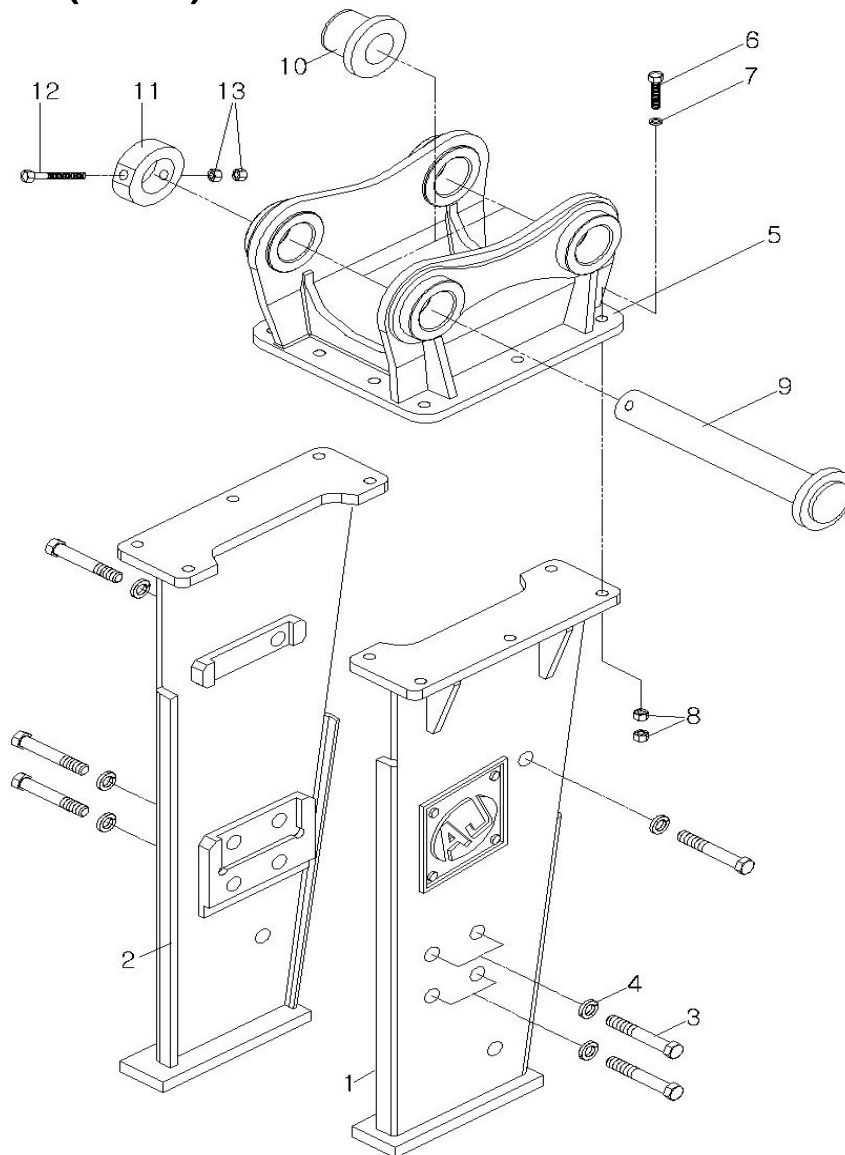
NO	PART NO.	PART NAME	QTY	REMARKS
-	A10100	MAIN BODY	1	1~38
-	N10100	SEAL KIT	1	
-	A10110	CYLINDER ASSY	1	1~23
1	B10110	CYLINDER	1	
2	D10210	TEFLON PLUG	3	
3	1BP11	O-RING	3	
4	DSI40	DUST SEAL	1	
5	ISI40	U-PACKING	1	
6	SRTN40	BUFFER SEAL	1	
7	D10110	IN/OUT ADAPTER	2	
8	1BP20	O-RING	2	
9	D10150	ADAPTER CAP	2	
10	D10230	AIR CHECK VALVE	1	
11	1BP18	O-RING	2	
12	B10120	PISTON	1	
-	A10130	SEAL RETAINER ASSY	1	13~18
13	B10130	SEAL RETAINER	1	
14	GAS37	GAS SEAL	1	
15	STP37	STEP SEAL	2	
16	568223	O-RING	2	
17	BFR37	BUFFER SEAL	1	
18	1BG60	O-RING	3	
-	A10300	VALVE ASSY	1	19~23
19	B10340	VALVE	1	
20	B10350	VALVE PLUG	1	
21	1BP30	O-RING	1	
22	1BG25	O-RING	1	
23	B10360	VALVE SLEEVE	1	
24	B10610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	11,25~27
25	D10641	GAS CHARGING VALVE	1	
26	D10642	GAS CHARGING VALVE PLUG	1	
27	1BP16	O-RING		
-	A10500	FRONT HEAD ASSY	1	28~35
28	B10510	FRONT HEAD	1	
29	C10530	LOWER BUSH	1	
30	C10560	BUSH PIN	2	
31	SP1335	SPRING PIN	2	
32	C10520	UPPER BUSH	1	
33	C10540	CHISEL PIN	1	
34	SP1080	SPRING PIN	1	
35	D10590	GREASE NIPPLE	1	
-	A10700	THROUGH BOLT ASSY	4	36~38
36	C10710	THROUGH BOLT	4	
37	C10720	THROUGH BOLT TOP NUT	4	
38	C10730	THROUGH BOLT WASHER	4	
39	K10100	H-WEDGE CHISEL	1	
40	K10200	MOIL POINT	1	
41	K10300	V-WEDGE CHISEL	1	
42	K10500	BLUNT CHISEL	1	
43	K10600	CONE CHISEL	1	

AB-100M (BOX)



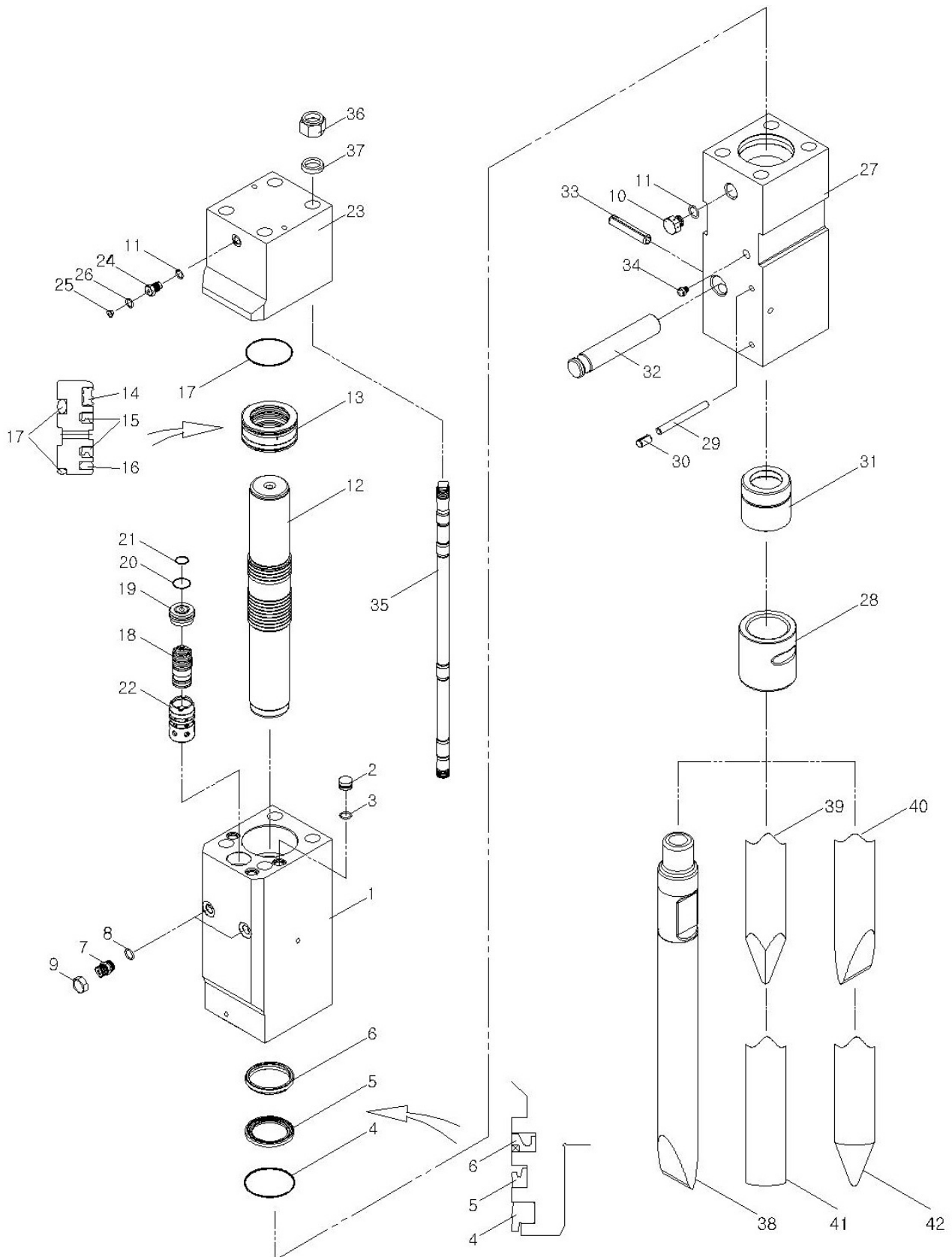
NO	PART NO.	PART NAME	QTY	REMARKS
1	F10110	BOX BRACKET	1	
2	F10910	LOWER DAMPER	1	
3	F10140	COVER PLATE	1	
4	SW12	SPRING WASHER	3	
5	WB1217530	WRENCH BOLT	3	
6	RP3012X	GREASE PLUG	1	
7	RP3012	STOP PIN PLUG	3	
8	RP4013	CHISEL PIN PLUG	1	
9	RP1253512	ADAPTER PLUG	2	
10	F10920	UPPER DAMPER	1	
11	F10320	UPPER PLATE	1	
12	HB202580	HEX BOLT	6	
13	SW20	SPRING WASHER	6	
14	HN2025	HEX NUT	12	

AT-100M (TOP)



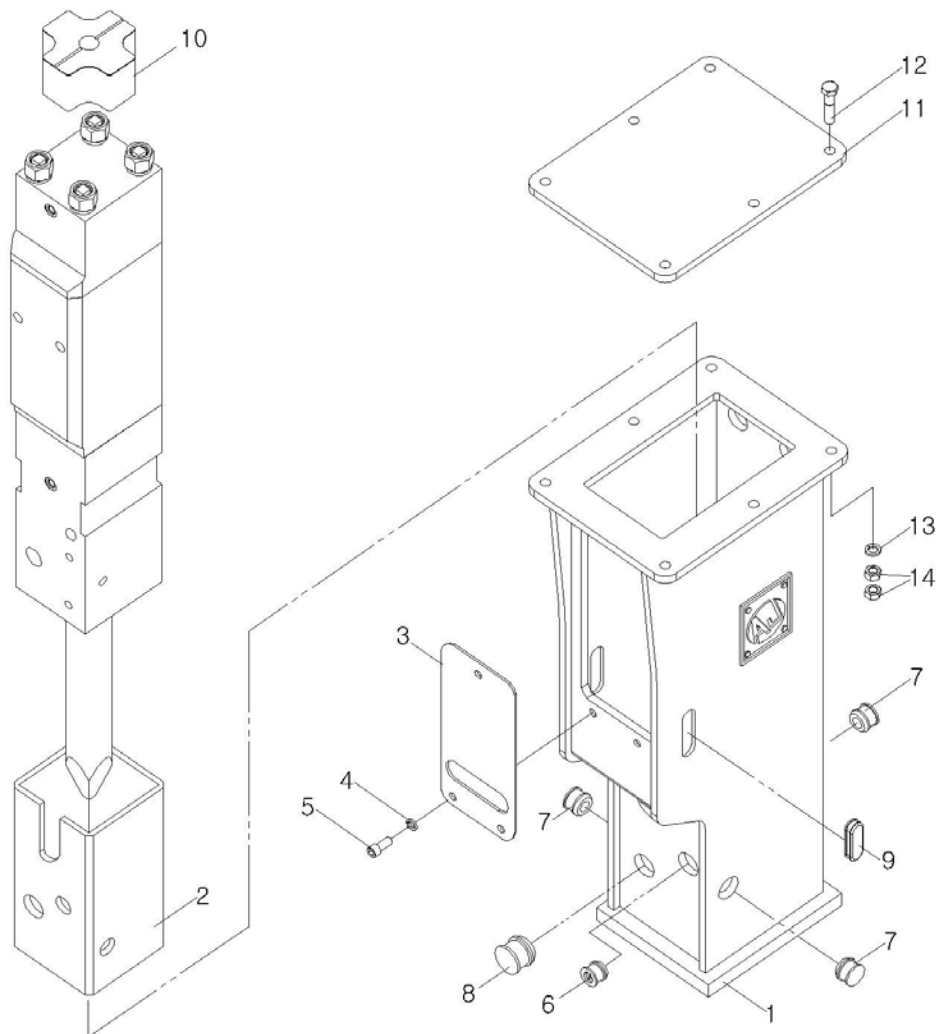
NO	PART NO.	PART NAME	QTY	REMARKS
1	F10210	TOP BRACEKT RIGHT	1	
2	F10220	TOP BRACKET LEFT	1	
3	HB161560	HEX BOLT	10	
4	SW16	SPRING WASHER	10	
5	F10350	MOUNT CAP	1	
6	HB202580	HEX BOLT	10	
7	SW20	SPRING WASHER	10	
8	HN2025	HEX NUT	20	
-	F10700	PIN BUSH ASSY	2	9~13
9	F10710	MOUNT PIN	2	
10	F10720	T-BUSH	4	
11	F10730	STOP BAR	2	
12	HB1217585	HEX BOLT	2	
13	HN12175	HEX NUT	4	

200M MAIN BODY



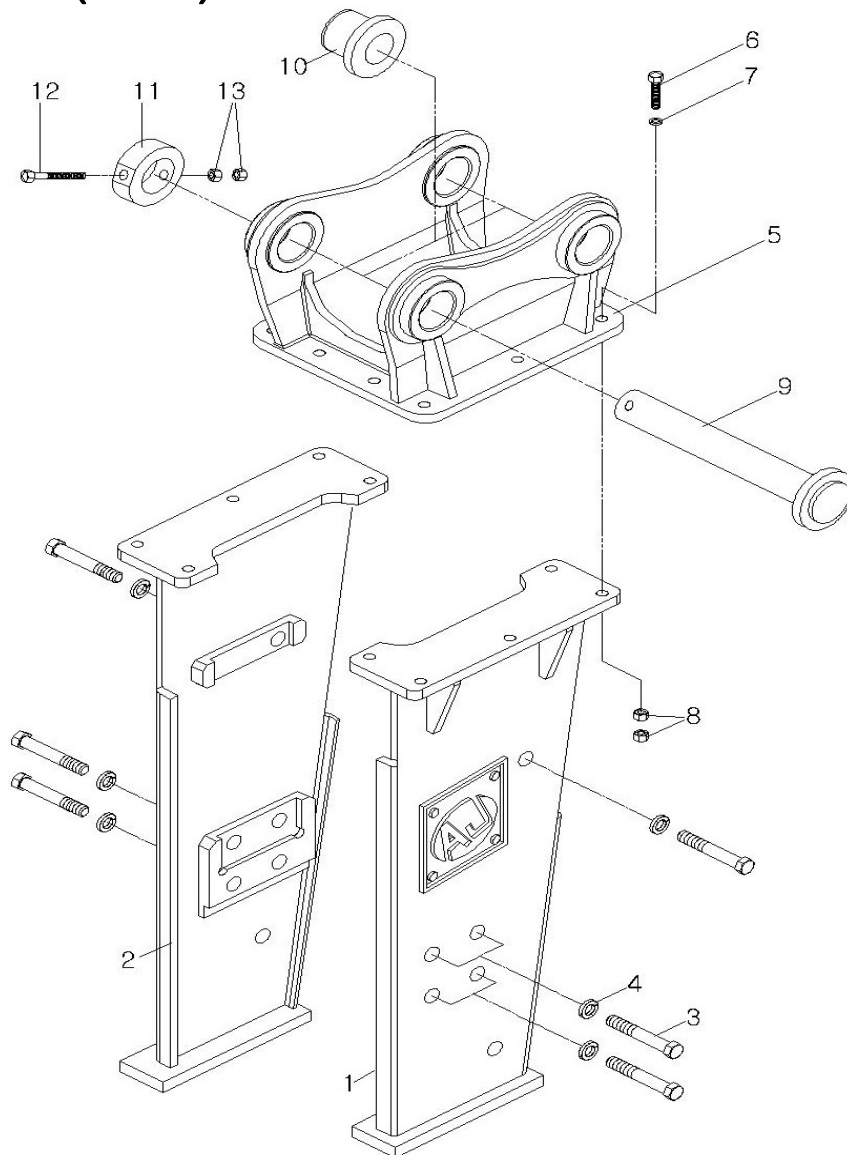
NO	PART NO.	PART NAME	QTY	REMARKS
-	A20100	MAIN BODY	1	1~37
-	N20100	SEAL KIT	1	
-	A20110	CYLINDER ASSY	1	1~22
1	B20110	CYLINDER	1	
2	D10210	TEFLON PLUG	3	
3	1BP11	O-RING	3	
4	DSI45	DUST SEAL	1	
5	ISI45	U-PACKING	1	
6	SRTN45	BUFFER SEAL	1	
7	D10110	IN/OUT ADAPTER	2	
8	1BP20	O-RING	2	
9	D10150	ADAPTER CAP	2	
10	D10230	AIR CHECK VALVE	1	
11	1BP18	O-RING	2	
12	B20120	PISTON	1	
-	A20130	SEAL RETAINER ASSY	1	13~17
13	B20130	SEAL RETAINER	1	
14	GAS42	GAS SEAL	1	
15	IUIS42	U-PACKING	2	
16	BFR42	BUFFER SEAL	1	
17	1BG65	O-RING	3	
-	A10300	VALVE ASSY	1	18~22
18	B10340	VALVE	1	
19	B10350	VALVE PLUG	1	
20	1BP30	O-RING	1	
21	1BG25	O-RING	1	
22	B10360	VALVE SLEEVE	1	
23	B20610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	11,24~26
24	D10641	GAS CHARGING VALVE	1	
25	D10642	GAS CHARGING VALVE PLUG	1	
26	1BP16	O-RING		
-	A20500	FRONT HEAD ASSY	1	27~34
27	B20510	FRONT HEAD	1	
28	C20530	LOWER BUSH	1	
29	C20560	BUSH PIN	2	
30	SP1335	SPRING PIN	2	
31	C20520	UPPER BUSH	1	
32	C20540	CHISEL PIN	1	
33	SP1080	SPRING PIN	1	
34	D10590	GREASE NIPPLE	1	
-	A20700	THROUGH BOLT ASSY	4	35~37
35	C20710	THROUGH BOLT	4	
36	C20720	THROUGH BOLT TOP NUT	4	
37	C20730	THROUGH BOLT WASHER	4	
38	K20100	H-WEDGE CHISEL	1	
39	K20200	MOIL POINT	1	
40	K20300	V-WEDGE CHISEL	1	
41	K20500	BLUNT CHISEL	1	
42	K20600	CONE CHISEL	1	

AB-200M (BOX)



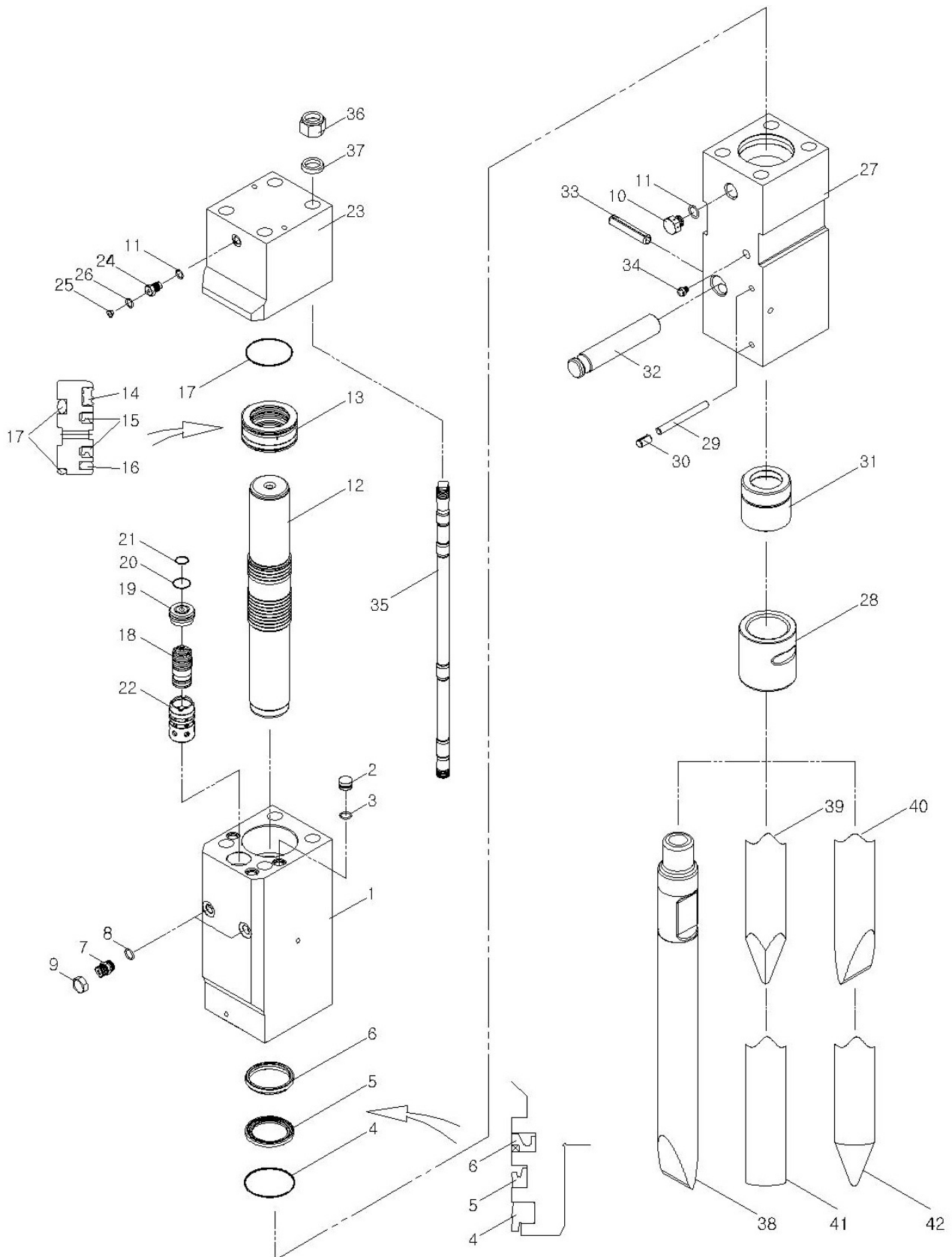
NO	PART NO.	PART NAME	QTY	REMARKS
1	F20110	BOX BRACKET	1	
2	F20910	LOWER DAMPER	1	
3	F20140	COVER PLATE	1	
4	SW12	SPRING WASHER	3	
5	WB1217530	WRENCH BOLT	3	
6	RP3012X	GREASE PLUG	1	
7	RP3012	STOP PIN PLUG	3	
8	RP4013	CHISEL PIN PLUG	1	
9	RP1253512	ADAPTER PLUG	2	
10	F10920	UPPER DAMPER	1	
11	F10320	UPPER PLATE	1	
12	HB202580	HEX BOLT	6	
13	SW20	SPRING WASHER	6	
14	HN2025	HEX NUT	12	

AT-200M (TOP)



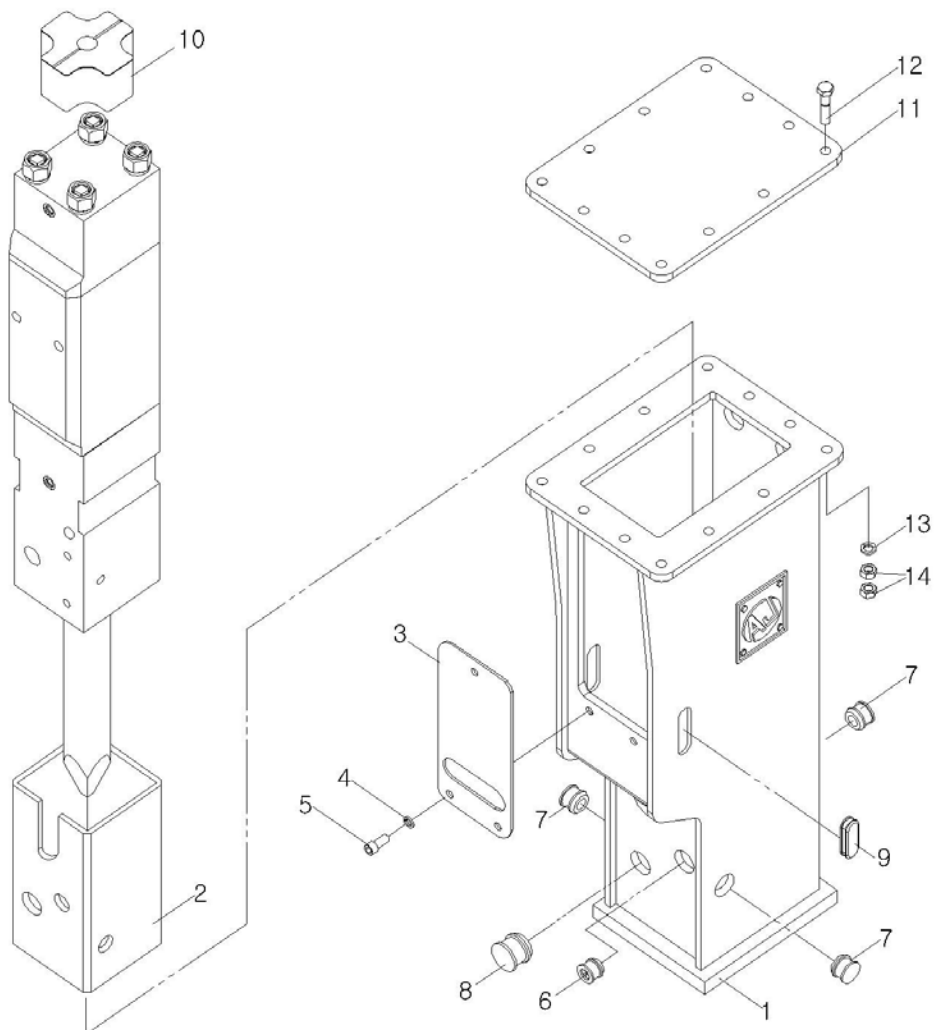
NO	PART NO.	PART NAME	QTY	REMARKS
1	F20210	TOP BRACKET RIGHT	1	
2	F20220	TOP BRACKET LEFT	1	
3	HB181560	HEX BOLT	10	
4	SW18	SPRING WASHER	10	
5	F10350	MOUNT CAP	1	
6	HB202580	HEX BOLT	10	
7	SW20	SPRING WASHER	10	
8	HN2025	HEX NUT	20	
-	F10700	PIN BUSH ASSY	2	9~13
9	F10710	MOUNT PIN	2	
10	F10720	T-BUSH	4	
11	F10730	STOP BAR	2	
12	HB1217585	HEX BOLT	2	
13	HN12175	HEX NUT	4	

300M MAIN BODY



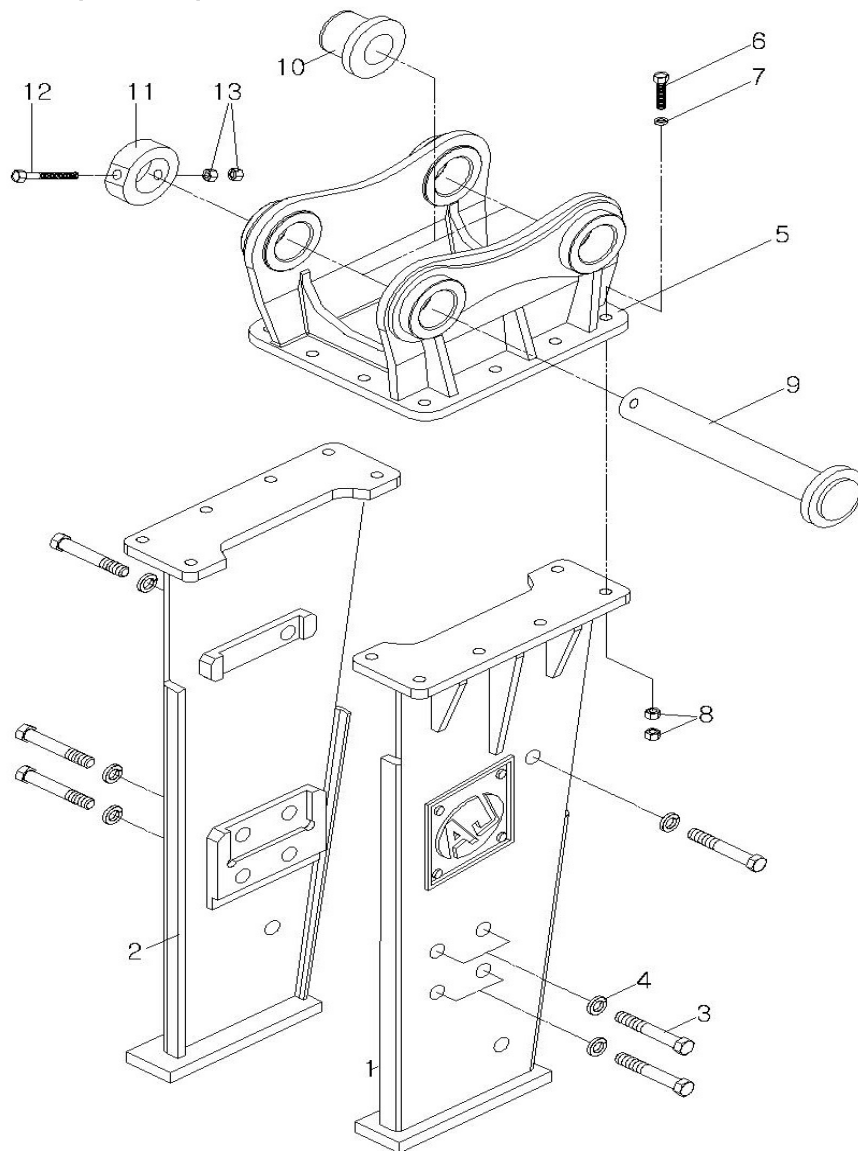
NO	PART NO.	PART NAME	QTY	REMARKS
-	A30100	MAIN BODY	1	1~37
-	N30100	SEAL KIT	1	
-	A30110	CYLINDER ASSY	1	1~22
1	B30110	CYLINDER	1	
2	D10210	TEFLON PLUG	3	
3	1BP11	O-RING	3	
4	DSI53	DUST SEAL	1	
5	ISI53	U-PACKING	1	
6	SRTN53	BUFFER SEAL	1	
7	D10110	IN/OUT ADAPTER	2	
8	1BP20	O-RING	2	
9	D10150	ADAPTER CAP	2	
10	D10230	AIR CHECK VALVE	1	
11	1BP18	O-RING	2	
12	B30120	PISTON	1	
-	A30130	SEAL RETAINER ASSY	1	13~17
13	B30130	SEAL RETAINER	1	
14	GAS50	GAS SEAL	1	
15	ISI50	U-PACKING	2	
16	BFR50	BUFFER SEAL	1	
17	1BG70	O-RING	3	
-	A30300	VALVE ASSY	1	18~22
18	B30340	VALVE	1	
19	B30350	VALVE PLUG	1	
20	1BP32	O-RING	1	
21	1BG25	O-RING	1	
22	B30360	VALVE SLEEVE	1	
23	B30610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	11,24~26
24	D10641	GAS CHARGING VALVE	1	
25	D10642	GAS CHARGING VALVE PLUG	1	
26	1BP16	O-RING	1	
-	A30500	FRONT HEAD ASSY	1	27~34
27	B30510	FRONT HEAD	1	
28	C30530	LOWER BUSH	1	
29	C20560	BUSH PIN	2	
30	SP1335	SPRING PIN	2	
31	C30520	UPPER BUSH	1	
32	C30540	CHISEL PIN	1	
33	SP1080	SPRING PIN	1	
34	D10590	GREASE NIPPLE	1	
-	A30700	THROUGH BOLT ASSY	4	35~37
35	C30710	THROUGH BOLT	4	
36	C30720	THROUGH BOLT TOP NUT	4	
37	C30730	THROUGH BOLT WASHER	4	
38	K30100	H-WEDGE CHISEL	1	
39	K30200	MOIL POINT	1	
40	K30300	V-WEDGE CHISEL	1	
41	K30500	BLUNT CHISEL	1	
42	K30600	CONE CHISEL	1	

AB-300M (BOX)



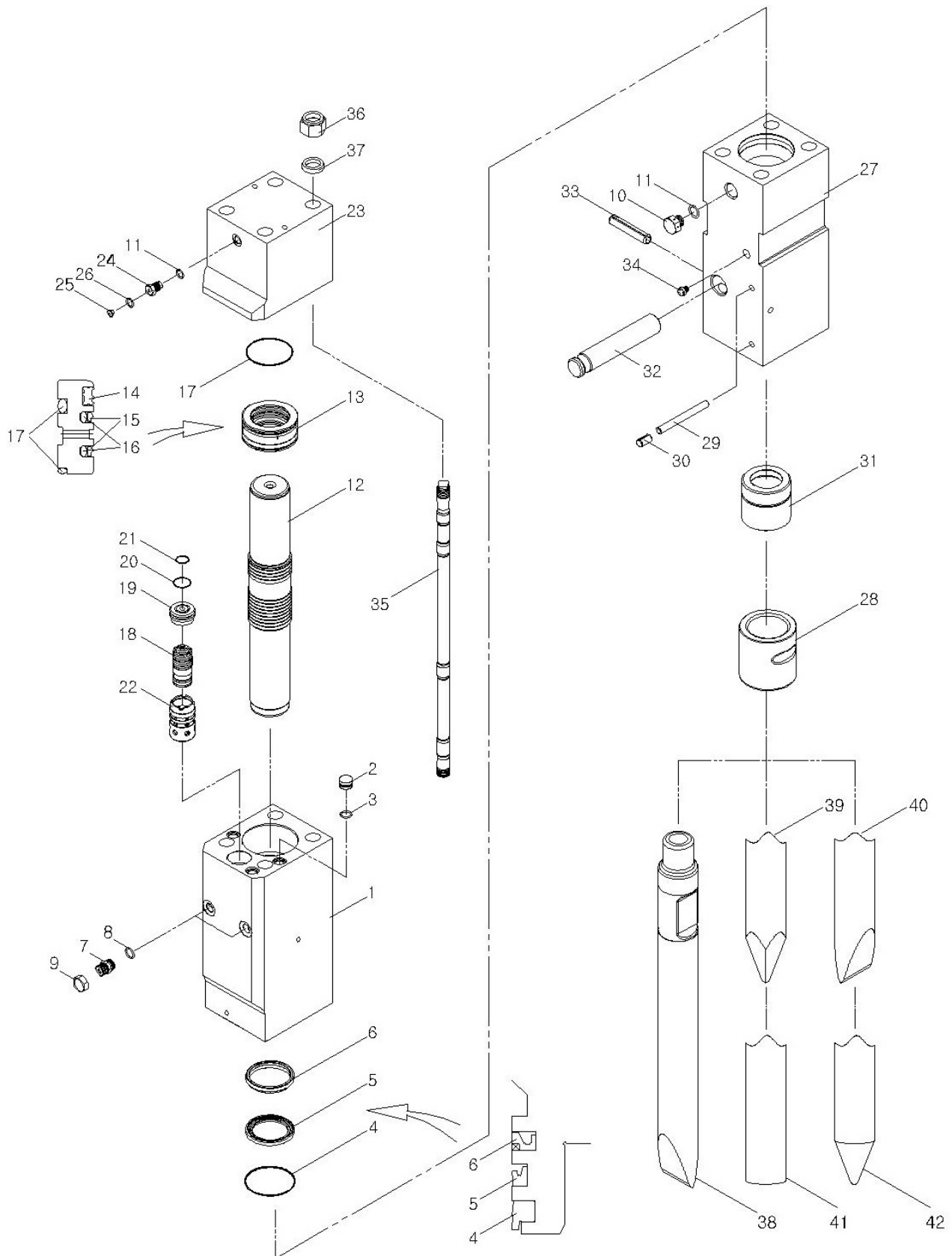
NO	PART NO.	PART NAME	QTY	REMARKS
1	F30110	BOX BRACKET	1	
2	F30910	LOWER DAMPER	1	
3	F30140	COVER PLATE	1	
4	SW12	SPRING WASHER	3	
5	WB1217530	WRENCH BOLT	3	
6	RP3012X	GREASE PLUG	1	
7	RP3012	STOP PIN PLUG	3	
8	RP4013	CHISEL PIN PLUG	1	
9	RP1253512	ADAPTER PLUG	2	
10	F30920	UPPER DAMPER	1	
11	F30320	UPPER PLATE	1	
12	HB202580	HEX BOLT	12	
13	SW20	SPRING WASHER	12	
14	HN2025	HEX NUT	24	

AT-300M (TOP)



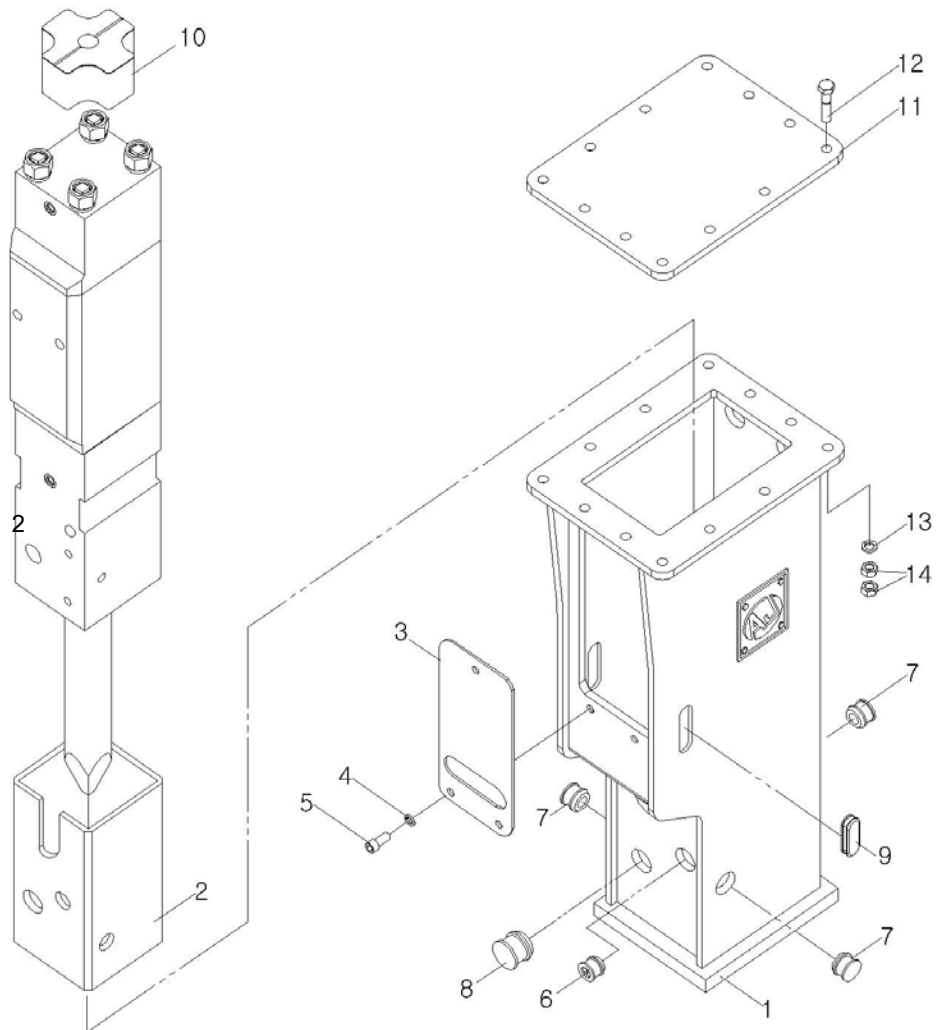
NO	PART NO.	PART NAME	QTY	REMARKS
1	F30210	TOP BRACKET RIGHT	1	
2	F30220	TOP BRACKET LEFT	1	
3	HB202570	HEX BOLT	10	
4	SW20	SPRING WASHER	10	
5	F30340	MOUNT CAP	1	
6	HB202590	HEX BOLT	12	
7	SW20	SPRING WASHER	12	
8	HN2025	HEX NUT	24	
-	F30700	PIN BUSH ASSY	2	9~13
9	F30710	MOUNT PIN	2	
10	F30720	T-BUSH	4	
11	F30730	STOP BAR	2	
12	HB12175110	HEX BOLT	2	
13	HN12175	HEX NUT	4	

350M MAIN BODY



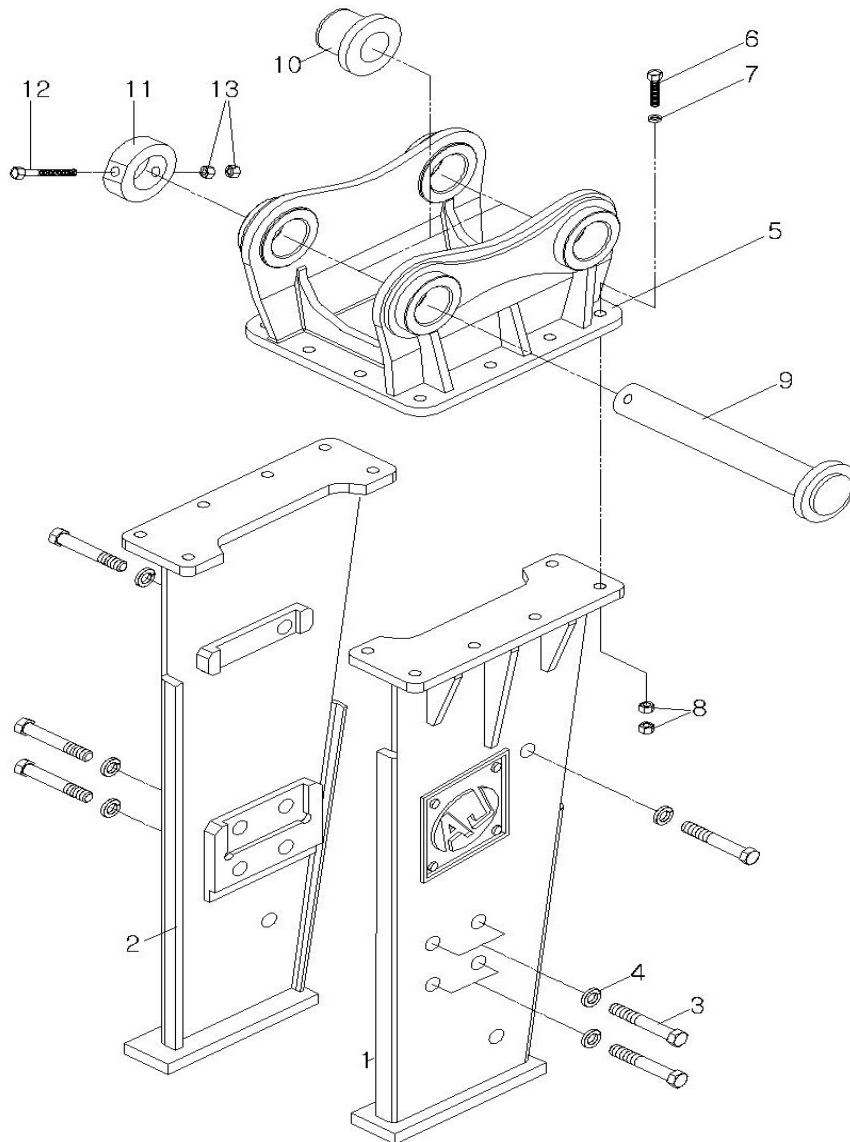
NO	PART NO.	PART NAME	QTY	REMARKS
-	A35100	MAIN BODY	1	1~37
-	N35100	SEAL KIT	1	
-	A35110	CYLINDER ASSY	1	1~22
1	B35110	CYLINDER	1	
2	D35210	TEFLON PLUG	3	
3	1BP14	O-RING	3	
4	DSI60	DUST SEAL	1	
5	ISI60	U-PACKING	1	
6	HBV60	BUFFER SEAL	1	
7	D10110	IN/OUT ADAPTER	2	
8	1BP20	O-RING	2	
9	D10150	ADAPTER CAP	2	
10	D10230	AIR CHECK VALVE	1	
11	1BP18	O-RING	2	
12	B35120	PISTON	1	
-	A35130	SEAL RETAINER ASSY	1	13~17
13	B35130	SEAL RETAINER	1	
14	IKH57	GAS SEAL	1	
15	STP57	STEP SEAL	2	
16	568333	O-RING	2	
17	1BG90	O-RING	3	
-	A30300	VALVE ASSY	1	18~22
18	B30340	VALVE	1	
19	B30350	VALVE PLUG	1	
20	1BP32	O-RING	1	
21	1BG25	O-RING	1	
22	B30360	VALVE SLEEVE	1	
23	B35610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	11,24~26
24	D10641	GAS CHARGING VALVE	1	
25	D10642	GAS CHARGING VALVE PLUG	1	
26	1BP16	O-RING	1	
-	A35500	FRONT HEAD ASSY	1	27~34
27	B35510	FRONT HEAD	1	
28	C35530	LOWER BUSH	1	
29	C20560	BUSH PIN	2	
30	SP1335	SPRING PIN	2	
31	C35520	UPPER BUSH	1	
32	C35540	CHISEL PIN	1	
33	SP1380	SPRING PIN	1	
34	D10590	GREASE NIPPLE	1	
-	A35700	THROUGH BOLT ASSY	4	35~37
35	C35710	THROUGH BOLT	4	
36	C30720	THROUGH BOLT TOP NUT	4	
37	C30730	THROUGH BOLT WASHER	4	
38	K35100	H-WEDGE CHISEL	1	
39	K35200	MOIL POINT	1	
40	K35300	V-WEDGE CHISEL	1	
41	K35500	BLUNT CHISEL	1	
42	K35600	CONE CHISEL	1	

AB-350M (BOX)



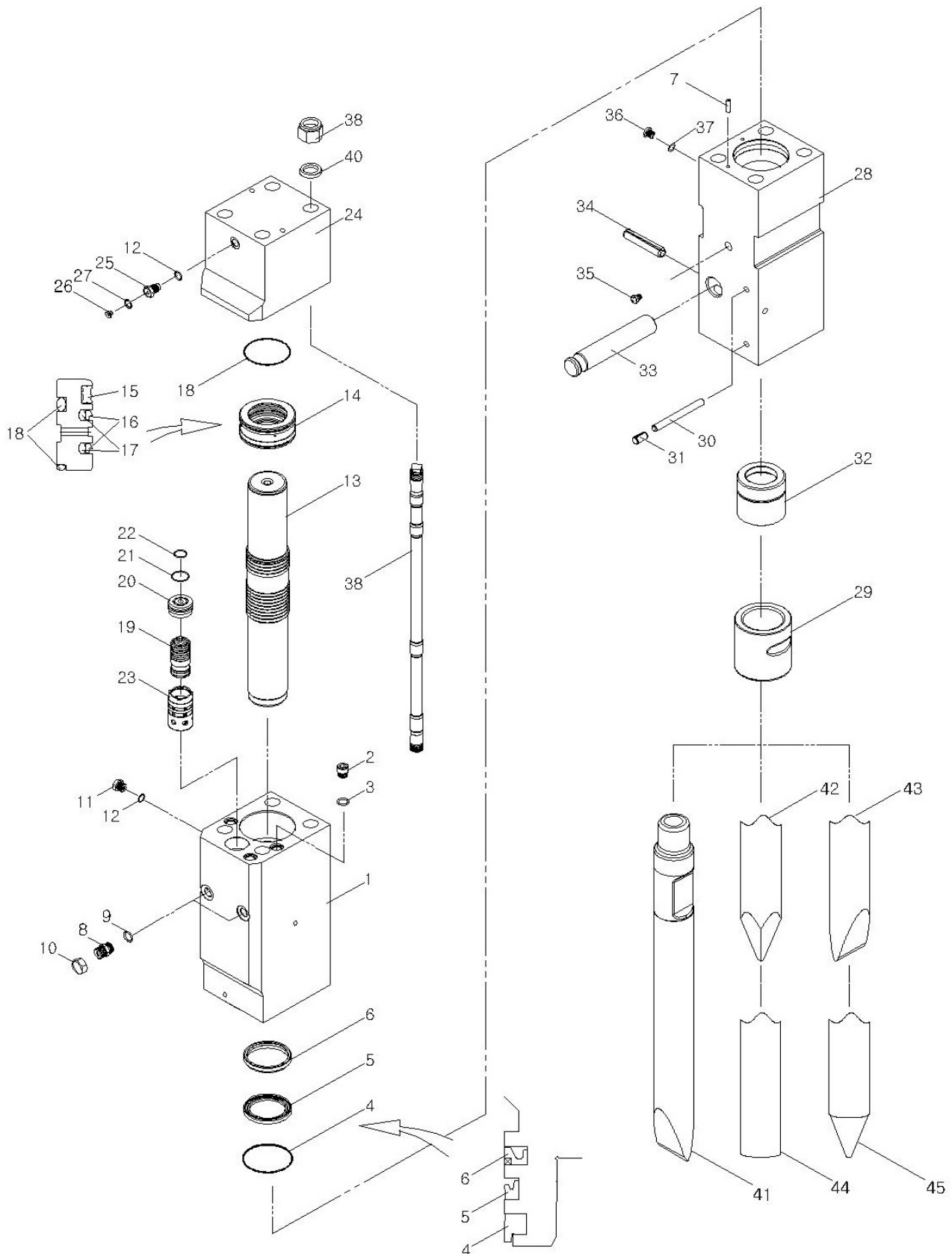
NO	PART NO.	PART NAME	QTY	REMARKS
1	F35110	BOX BRACKET	1	
2	F35910	LOWER DAMPER	1	
3	F35140	COVER PLATE	1	
4	SW16	SPRING WASHER	3	
5	WB162030	WRENCH BOLT	3	
6	RP3012X	GREASE PLUG	1	
7	RP3012	STOP PIN PLUG	3	
8	RP6013	CHISEL PIN PLUG	1	
9	RP1253512	ADAPTER PLUG	2	
10	F30920	UPPER DAMPER	1	
11	F35320	UPPER PLATE	1	
12	HB202580	HEX BOLT	12	
13	SW20	SPRING WASHER	12	
14	HN2025	HEX NUT	24	

AT-350M (TOP)



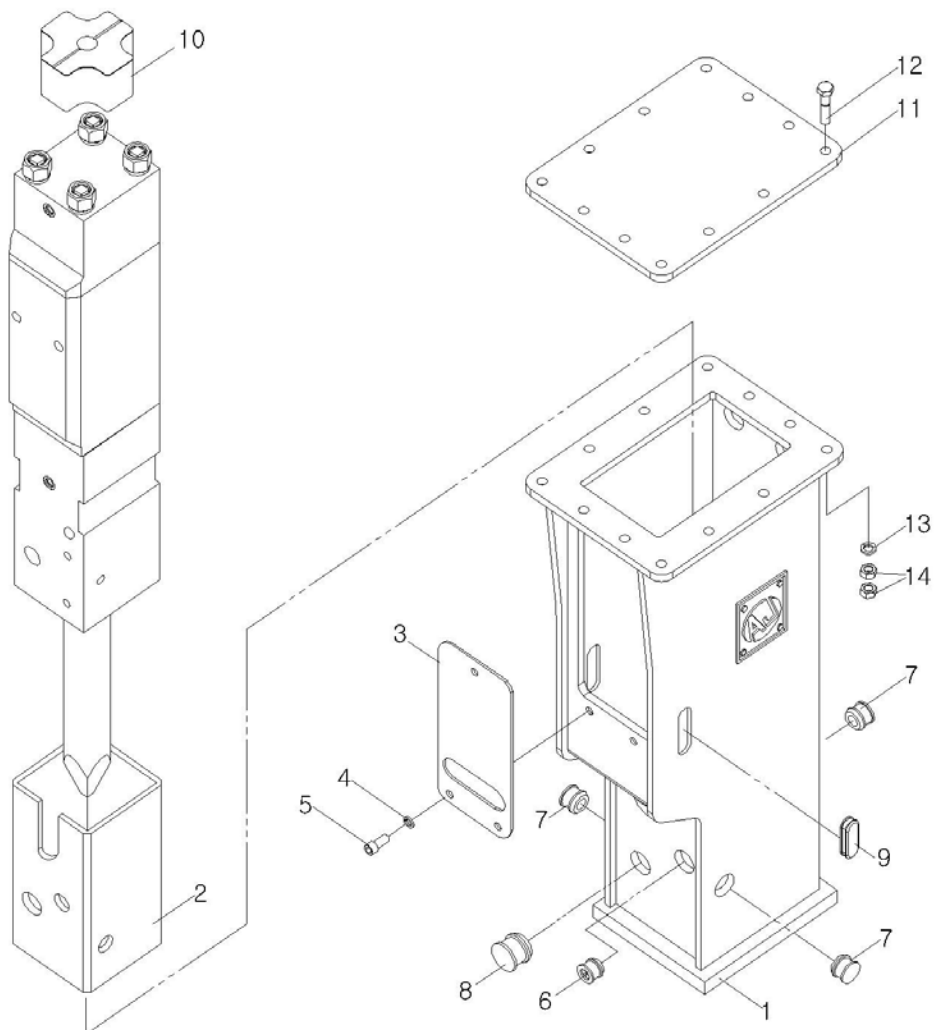
NO	PART NO.	PART NAME	QTY	REMARKS
1	F35210	TOP BRACKET RIGHT	1	
2	F35220	TOP BRACKET LEFT	1	
3	HB202570	HEX BOLT	10	
4	SW20	SPRING WASHER	10	
5	F30340	MOUNT CAP	1	
6	HB202590	HEX BOLT	12	
7	SW20	SPRING WASHER	12	
8	HN2025	HEX NUT	24	
-	F30700	PIN BUSH ASSY	2	9~13
9	F30710	MOUNT PIN	2	
10	F30720	T-BUSH	4	
11	F30730	STOP BAR	2	
12	HB12175110	HEX BOLT	2	
13	HN12175	HEX NUT	4	

400M MAIN BODY



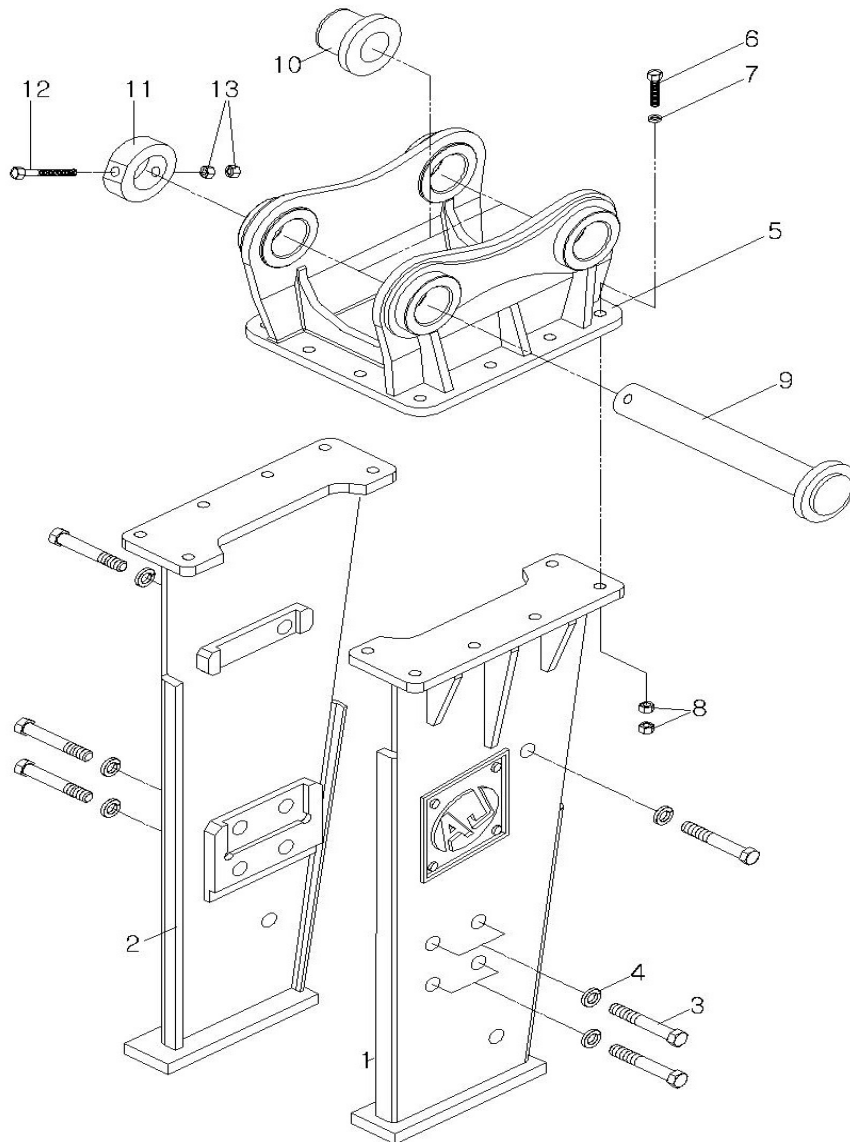
NO	PART NO.	PART NAME	QTY	REMARKS
-	A40100	MAIN BODY	1	1~40
-	N40100	SEAL KIT	1	
-	A40110	CYLINDER ASSY	1	1~23
1	B40110	CYLINDER	1	
2	D40210	SOCKET PLUG	3	
3	1BP16	O-RING	3	
4	DSI70	DUST SEAL	1	
5	ISI70	U-PACKING	1	
6	HBY70	BUFFER SEAL	1	
7	D40580	KNOCK PIN	1	
8	D10110	IN/OUT ADAPTER	2	
9	1BP20	O-RING	2	
10	D10150	ADAPTER CAP	2	
11	D10230	AIR CHECK VALVE	1	
12	1BP18	O-RING	2	
13	B40120	PISTON	1	
-	A40130	SEAL RETAINER ASSY	1	14~18
14	B40130	SEAL RETAINER	1	
15	GAS68	GAS SEAL	1	
16	STP68	STEP SEAL	2	
17	568336	O-RING	2	
18	568239	O-RING	3	
-	A40300	VALVE ASSY	1	19~23
19	B40340	VALVE	1	
20	B40350	VALVE PLUG	1	
21	1BG40	O-RING	1	
22	1BG30	O-RING	1	
23	B40360	VALVE SLEEVE	1	
24	B40610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	22,25~27
25	D10641	GAS CHARGING VALVE	1	
26	D10642	GAS CHARGING VALVE PLUG	1	
27	1BP16	O-RING	1	
-	A40500	FRONT HEAD ASSY	1	28~36
28	B40510	FRONT HEAD	1	
29	C40530	LOWER BUSH	1	
30	C40560	BUSH PIN	2	
31	SP1640	SPRING PIN	2	
32	C40520	UPPER BUSH	1	
33	C40540	CHISEL PIN	1	
34	SP1680	SPRING PIN	1	
35	D10590	GREASE NIPPLE	1	
36	WP1/4"	WRENCH PLUG	1	
37	1BP11	O-RING	1	
-	A40700	THROUGH BOLT ASSY	4	38~40
38	C40710	THROUGH BOLT	4	
39	C40720	THROUGH BOLT TOP NUT	4	
40	C40730	THROUGH BOLT WASHER	4	
41	K40100	H-WEDGE CHISEL	1	
42	K40200	MOIL POINT	1	
43	K40300	V-WEDGE CHISEL	1	
44	K40500	BLUNT CHISEL	1	
45	K40600	CONE CHISEL	1	

AB-400M (BOX)



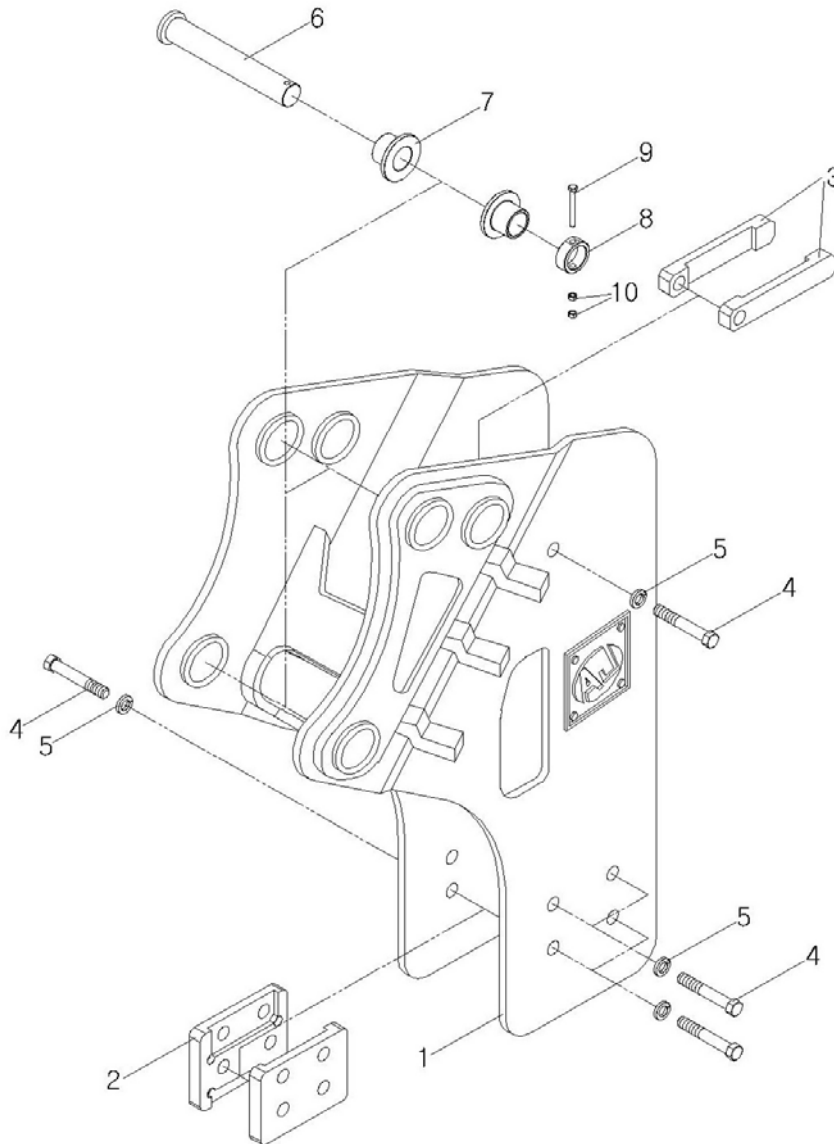
NO	PART NO.	PART NAME	QTY	REMARKS
1	F40110	BOX BRACKET	1	
2	F40910	LOWER DAMPER	1	
3	F40140	COVER PLATE	1	
4	SW16	SPRING WASHER	3	
5	WB162030	WRENCH BOLT	3	
6	RP3012X	GREASE PLUG	1	
7	RP3012	STOP PIN PLUG	3	
8	RP6013	CHISEL PIN PLUG	1	
9	RP1253512	ADAPTER PLUG	2	
10	F40920	UPPER DAMPER	1	
11	F35320	UPPER PLATE	1	
12	HB202580	HEX BOLT	12	
13	SW20	SPRING WASHER	12	
14	HN2025	HEX NUT	24	

AT-400M (TOP)



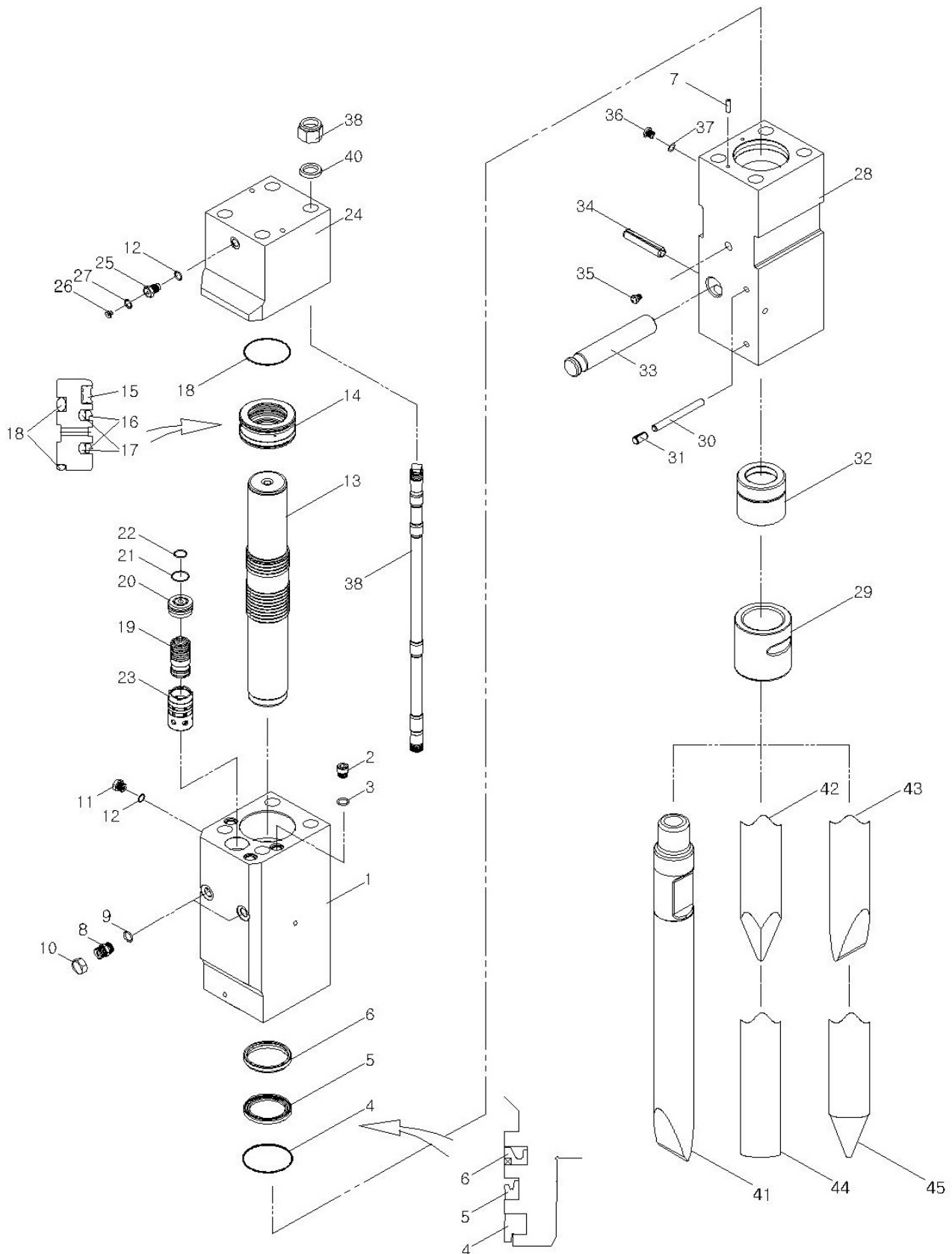
NO	PART NO.	PART NAME	QTY	REMARKS
1	F40210	TOP BRACEKT RIGHT	1	
2	F40220	TOP BRACKET LEFT	1	
3	HB243080	HEX BOLT	10	
4	SW24	SPRING WASHER	10	
5	F40340	MOUNT CAP	1	
6	HB202590	HEX BOLT	12	
7	SW20	SPRING WASHER	12	
8	HN2025	HEX NUT	24	
-	F40700	PIN BUSH ASSY	2	9~13
9	F40710	MOUNT PIN	2	
10	F40720	T-BUSH	4	
11	F40730	STOP BAR	2	
12	HB12175110	HEX BOLT	2	
13	HN12175	HEX NUT	4	

ABH-400M (BACKHOE)



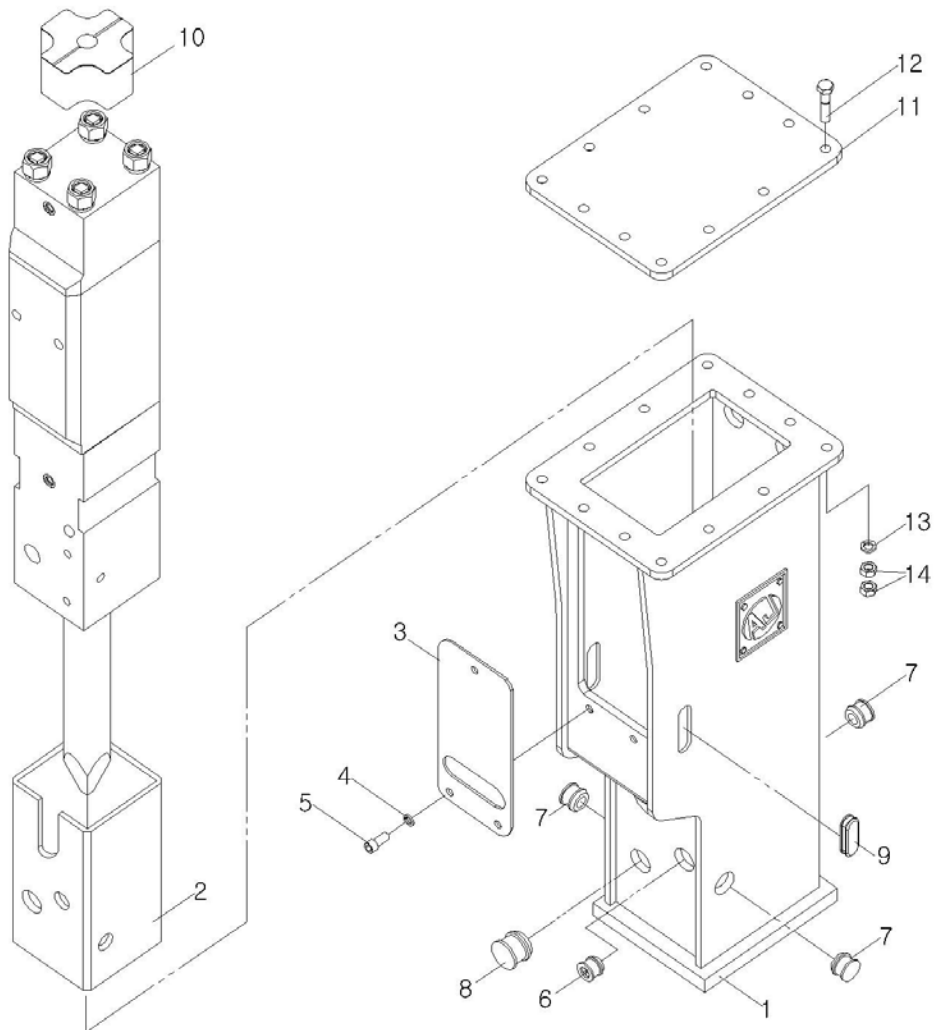
NO	PART NO.	PART NAME	QTY	REMARKS
1	F40560	BACKHOE BRACKET	1	
2	F40570	SET PLATE	2	
3	F40580	GUIDE PLATE	2	
4	HB243080	HEX BOLT	10	
5	SW24	SPRING WASHER	10	
-	F40700	PIN BUSH ASSY	2	6~10
6	F40710	MOUNT PIN	2	
7	F40720	T-BUSH	4	
8	F40730	STOP BAR	2	
9	HB12175110	HEX BOLT	2	
10	HN12175	HEX NUT	4	

430M MAIN BODY



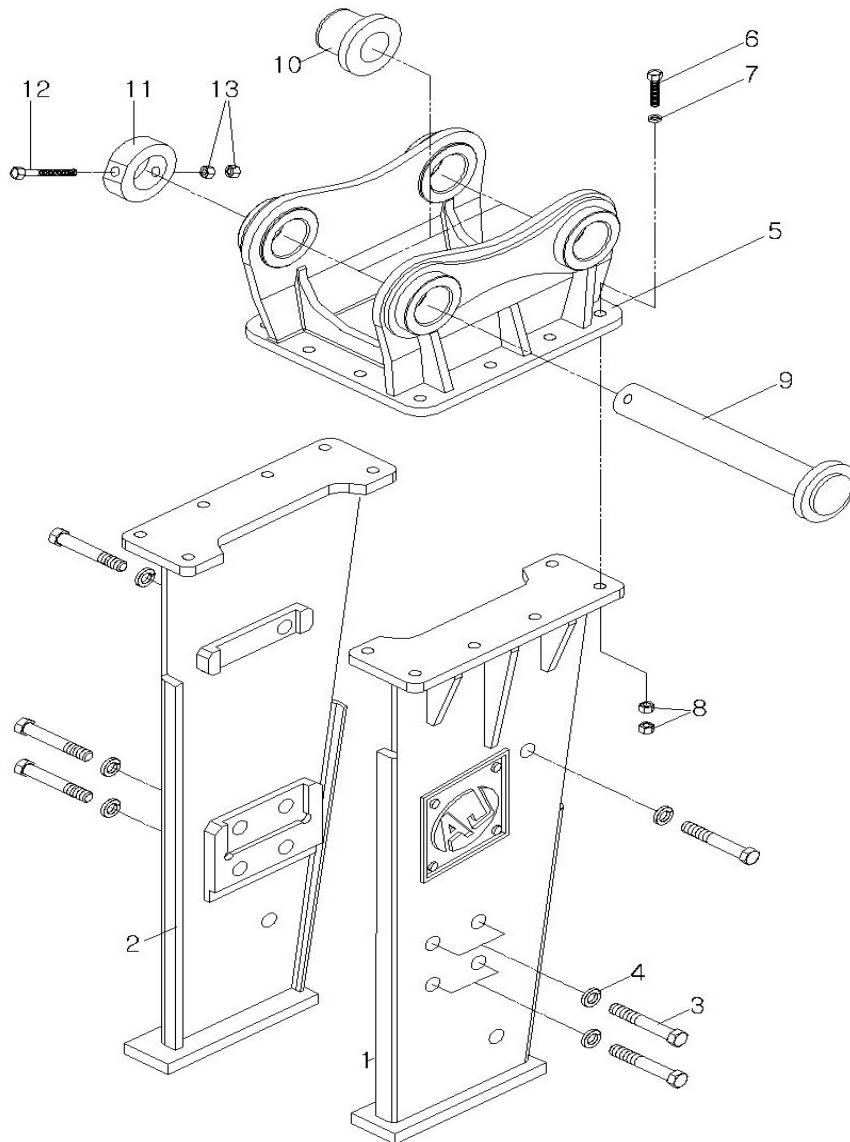
NO	PART NO.	PART NAME	QTY	REMARKS
-	A43100	MAIN BODY	1	1~40
-	N43100	SEAL KIT	1	
-	A43110	CYLINDER ASSY	1	1~22
1	B43110	CYLINDER	1	
2	D40210	SOCKET PLUG	3	
3	1BP16	O-RING	3	
4	DSI75	DUST SEAL	1	
5	ISI75	U-PACKING	1	
6	HBY75	BUFFER SEAL	1	
7	D40580	KNOCK PIN	1	
8	D10110	IN/OUT ADAPTER	2	
9	1BP20	O-RING	2	
10	D10150	ADAPTER CAP	2	
11	D10230	AIR CHECK VALVE	1	
12	1BP18	O-RING	2	
13	B43120	PISTON	1	
-	A43130	SEAL RETAINER ASSY	1	13~17
14	B43130	SEAL RETAINER	1	
15	GAS73	GAS SEAL	1	
16	STP73	STEP SEAL	2	
17	568338	O-RING	2	
18	1BG100	O-RING	3	
-	A43300	VALVE ASSY	1	18~22
19	B43340	VALVE	1	
20	B43350	VALVE PLUG	1	
21	1BG40	O-RING	1	
22	1BG25	O-RING	1	
23	B43360	VALVE SLEEVE	1	
24	B43610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	12,25~27
25	D10641	GAS CHARGING VALVE	1	
26	D10642	GAS CHARGING VALVE PLUG	1	
27	1BP16	O-RING	1	
-	A43500	FRONT HEAD ASSY	1	28~37
28	B43510	FRONT HEAD	1	
29	C43530	LOWER BUSH	1	
30	C40560	BUSH PIN	2	
31	SP1640	SPRING PIN	2	
32	C43520	UPPER BUSH	1	
33	C43540	CHISEL PIN	1	
34	SP1680	SPRING PIN	1	
35	D10590	GREASE NIPPLE	1	
36	WP1/4"	WRENCH PLUG	1	
37	1BP11	O-RING	1	
-	A43700	THROUGH BOLT ASSY	4	38~40
38	C43710	THROUGH BOLT	4	
39	C43720	THROUGH BOLT TOP NUT	4	
40	C43730	THROUGH BOLT WASHER	4	
41	K43100	H-WEDGE CHISEL	1	
42	K43200	MOIL POINT	1	
43	K43300	V-WEDGE CHISEL	1	
44	K43500	BLUNT CHISEL	1	
45	K43600	CONE CHISEL	1	

AB-430M (BOX)



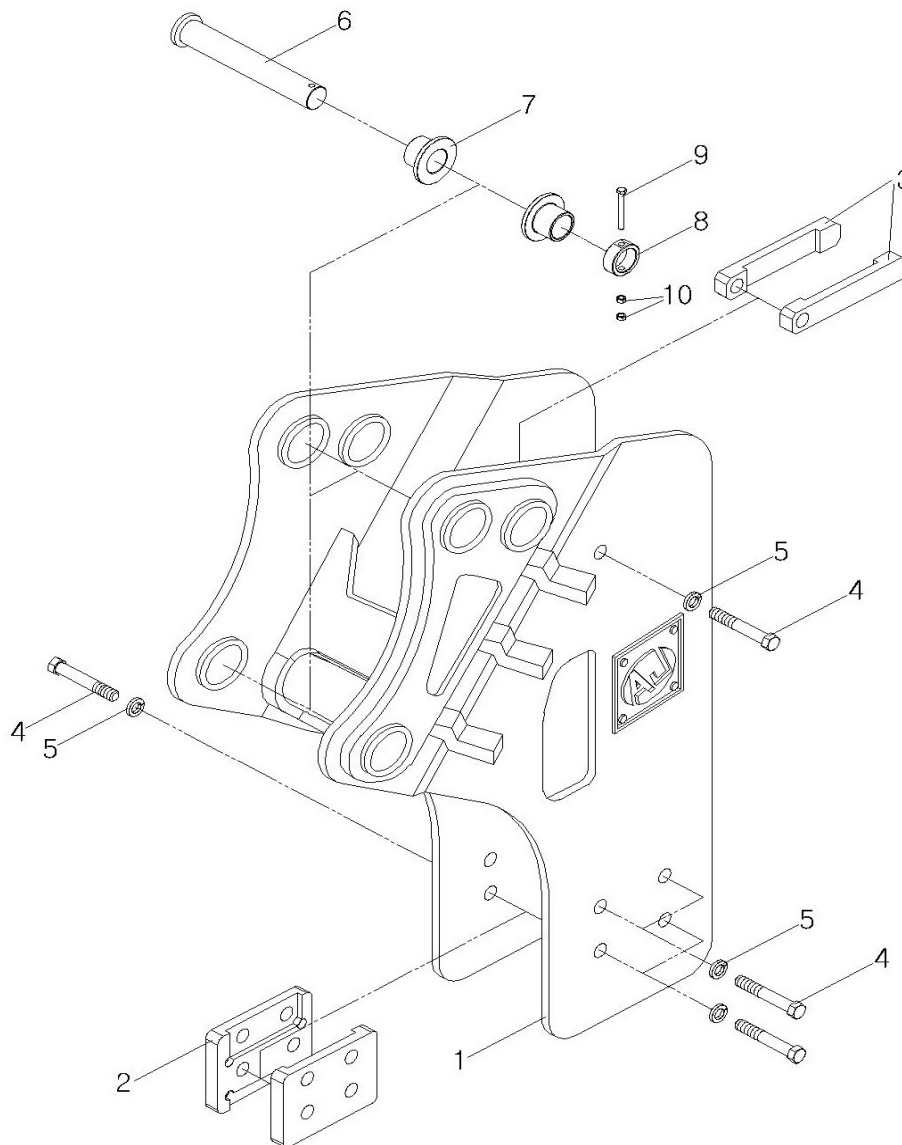
NO	PART NO.	PART NAME	QTY	REMARKS
1	F43110	BOX BRACKET	1	
2	F43910	LOWER DAMPER	1	
3	F43140	COVER PLATE	1	
4	SW16	SPRING WASHER	3	
5	WB162030	WRENCH BOLT	3	
6	RP3012X	GREASE PLUG	1	
7	RP3012	STOP PIN PLUG	3	
8	RP6013	CHISEL PIN PLUG	1	
9	RP1253512	ADAPTER PLUG	2	
10	F43920	UPPER DAMPER	1	F43921 (80T)
11	F35320	UPPER PLATE	1	
12	HB202590	HEX BOLT	12	
13	SW20	SPRING WASHER	12	
14	HN2025	HEX NUT	24	

AT-430M (TOP)



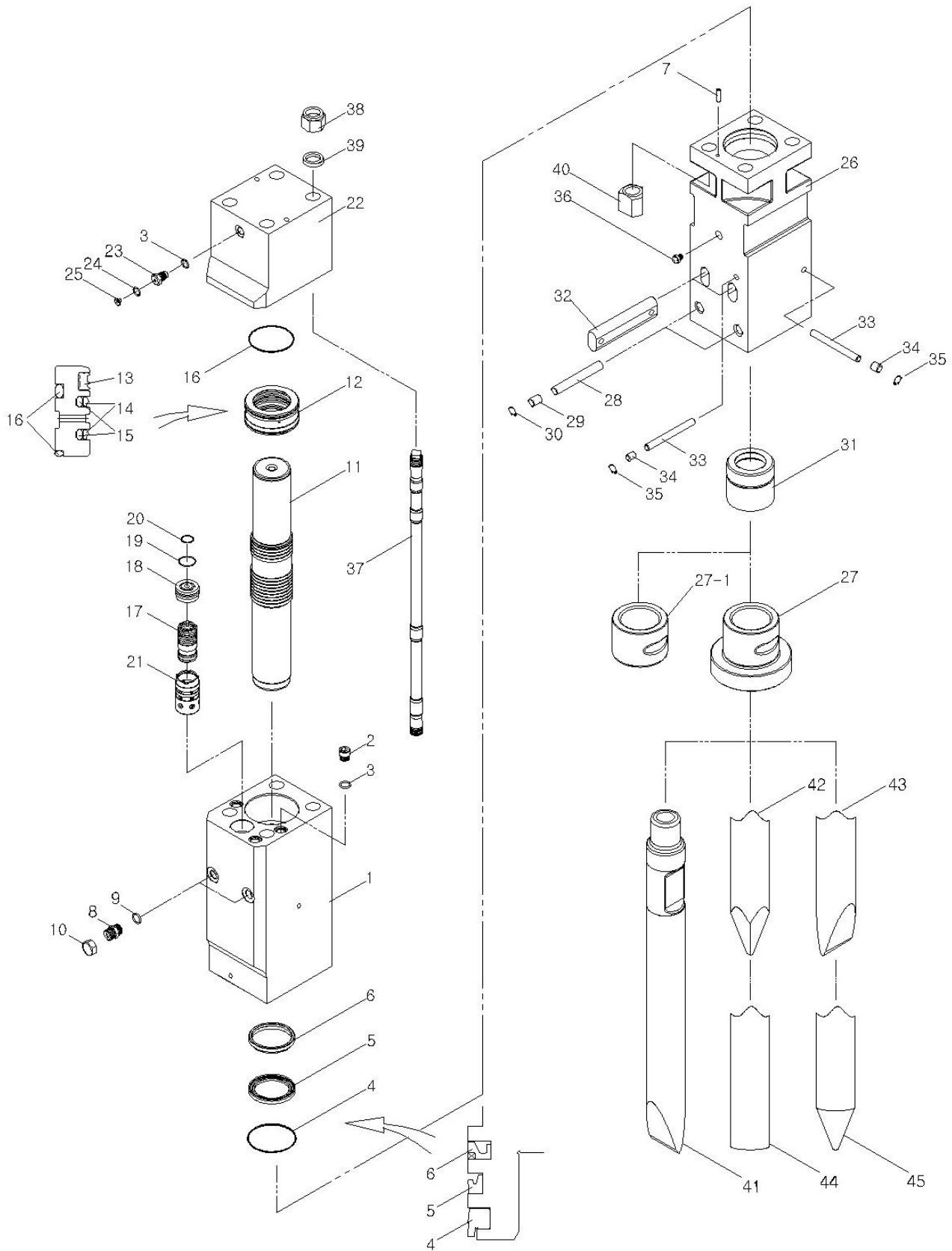
NO	PART NO.	PART NAME	QTY	REMARKS
1	F43210	TOP BRACKET RIGHT	1	
2	F43220	TOP BRACKET LEFT	1	
3	HB273080	HEX BOLT	10	
4	SW27	SPRING WASHER	10	
5	F40340	MOUNT CAP	1	
6	HB202590	HEX BOLT	12	
7	SW20	SPRING WASHER	12	
8	HN2025	HEX NUT	24	
-	F40700	PIN BUSH ASSY	2	9~13
9	F40710	MOUNT PIN	2	
10	F40720	T-BUSH	4	
11	F40730	STOP BAR	2	
12	HB12175110	HEX BOLT	2	
13	HN12175	HEX NUT	4	

ABH-430M (BACKHOE)



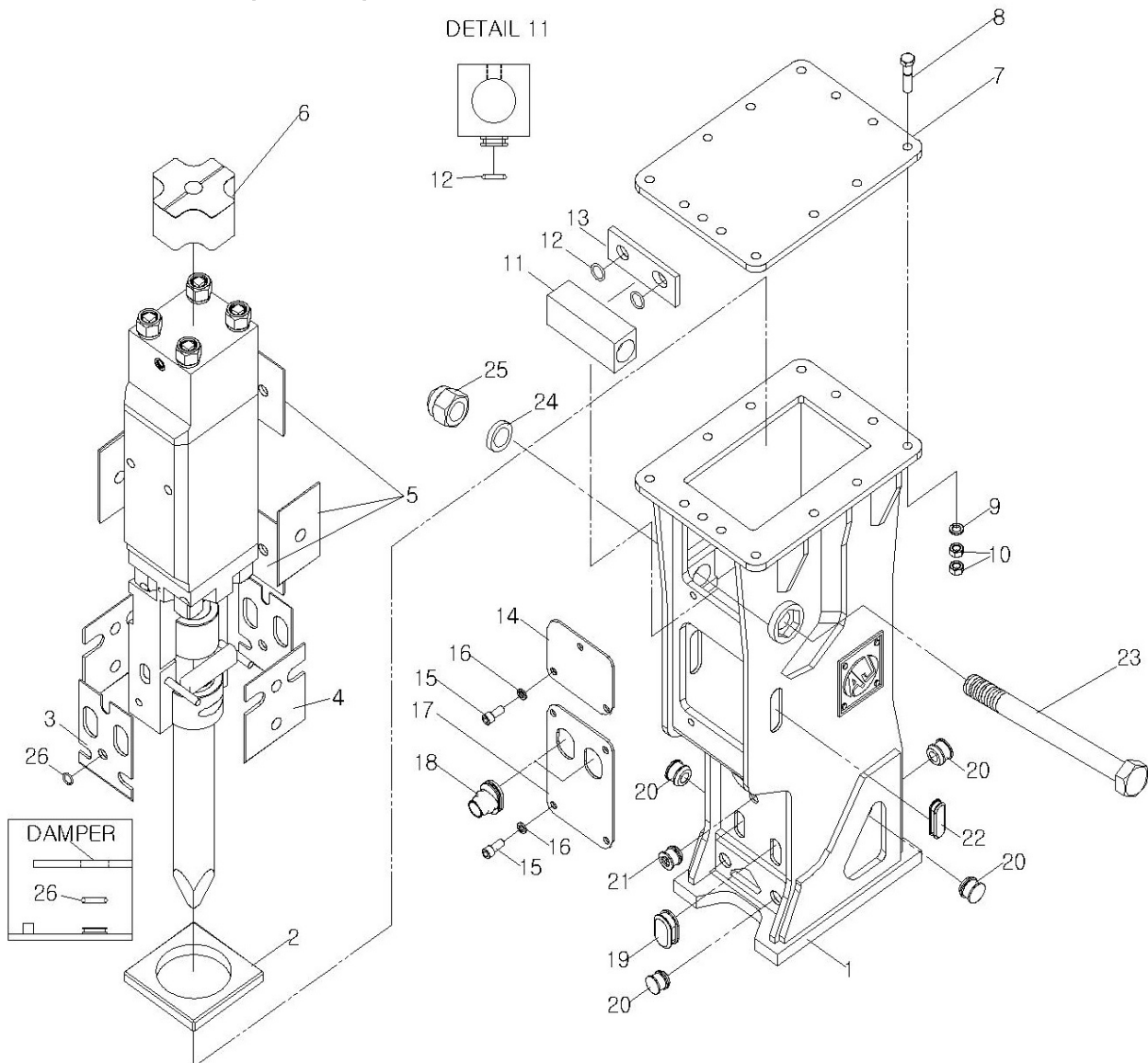
NO	PART NO.	PART NAME	QTY	REMARKS
1	F43560	BACKHOE BRACKET	1	
2	F43570	SET PLATE	2	
3	F43580	GUIDE PLATE	2	
4	HB273080	HEX BOLT	10	
5	SW27	SPRING WASHER	10	
-	F40700	PIN BUSH ASSY	2	6~10
6	F40710	MOUNT PIN	2	
7	F40720	T-BUSH	4	
8	F40730	STOP BAR	2	
9	HB12175110	HEX BOLT	2	
10	HN12175	HEX NUT	4	

450M MAIN BODY



NO	PART NO.	PART NAME	QTY	REMARKS
-	A45100	MAIN BODY (TOP)	1	1~26,27,28~40
-	A45101	MAIN BODY (BOX)	1	1~26,27-,28~40
-	N45100	SEAL KIT	1	
-	A45110	CYLINDER ASSY	1	1~21
1	B45110	CYLINDER	1	
2	D45210	SOCKET PLUG	3	
3	1BP18	O-RING	4	
4	DSI85	DUST SEAL	1	
5	ISI85	U-PACKING	1	
6	HBY85	BUFFER SEAL	1	
7	D40510	KNOCK PIN	1	
8	D45110	IN/OUT ADAPTER	2	
9	1BP24	O-RING	2	
10	D45120	ADAPTER CAP	1	
11	B43120	PISTON	1	
-	A40130	SEAL RETAINER ASSY	1	12~16
12	B40130	SEAL RETAINER	1	
13	GAS83.5	GAS SEAL	1	
14	STP83.5	STEP SEAL	2	
15	568341	O-RING	2	
16	1BG115	O-RING	3	
-	A45300	VALVE ASSY	1	17~21
17	B45340	VALVE	1	
18	B45350	VALVE PLUG	1	
19	1BG45	O-RING	1	
20	1BG30	O-RING	1	
21	B45360	VALVE SLEEVE	1	
22	B45610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	3,23~25
23	D10641	GAS CHARGING VALVE	1	
24	1BP16	O-RING	1	
25	D10642	GAS CHARGING VALVE PLUG	1	
-	A45500	FRONT HEAD ASSY (TOP)	1	26,27,28~36
-	A45510	FRONT HEAD ASSY (BOX)	1	26,27-1,28~36
26	B45510	FRONT HEAD	1	
27	C45530	LOWER BUSH (TOP)	1	
27-1	C45531	LOWER BUSH (BOX)	1	
28	C45560	BUSH PIN	2	
29	RP20	RUBBER PLUG	2	
30	SR21	SNAP RING	2	
31	C45520	UPPER BUSH	1	
32	C45540	CHISEL PIN	2	
33	C45550	STOP PIN	2	
34	RP18	RUBBER PLUG	2	
35	SR19	SNAP RING	2	
36	D10590	GREASE NIPPLE	1	
-	A45700	THROUGH BOLT ASSY	4	38~41
37	C45710	THROUGH BOLT	4	
38	C45720	THROUGH BOLT TOP NUT	4	
39	C45730	THROUGH BOLT WASHER	4	
40	C45740	THROUGH BOLT BOTTOM NUT	4	
41	K45100	H-WEDGE CHISEL	1	
42	K45200	MOIL POINT	1	
43	K45300	V-WEDGE CHISEL	1	
44	K45500	BLUNT CHISEL	1	
45	K45600	CONE CHISEL	1	

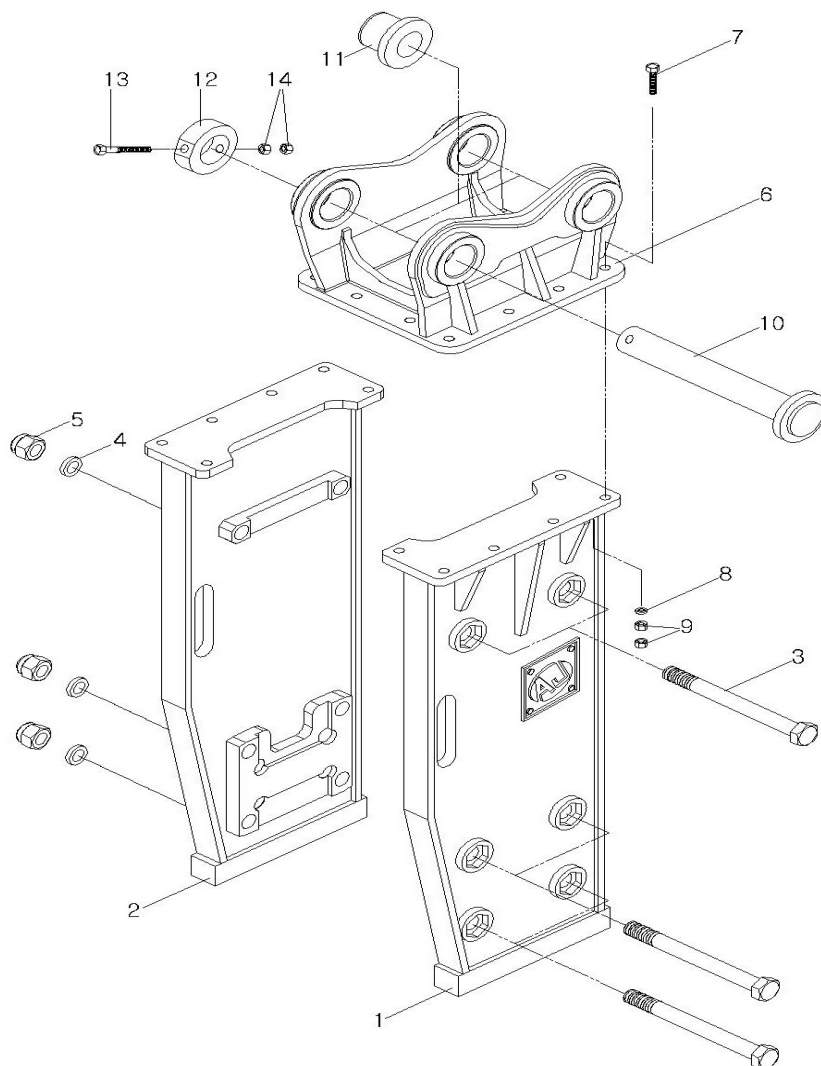
AB-450M (BOX)



NO	PART NO.	PART NAME	QTY	REMARKS
1	F45110	BOX BRACKET	1	
2	F45910	LOWER DAMPER	1	
3	F45930	FRONT PLATE	2	
4	F45940	FRONT SIDE PLATE	2	
5	F45960	SIDE PLATE (A)	4	
6	F43920	UPPER DAMPER	1	F43921 (80T)
7	F45320	UPPER PLATE	1	
8	HB202590	HEX BOLT	12	
9	SW20	SPRING WASHER	12	
10	HN2025	HEX NUT	24	
11	F45120	GUIDE BLOCK	1	
12	1BP24	O-RING	2	
13	F45950	GUIDE DAMPER	1	
14	F45140	COVER PLATE (A)	1	
15	WB162030	WRENCH BOLT	7	
16	SW16	SPRING WASHER	7	
17	F45150	COVER PLATE (B)	1	

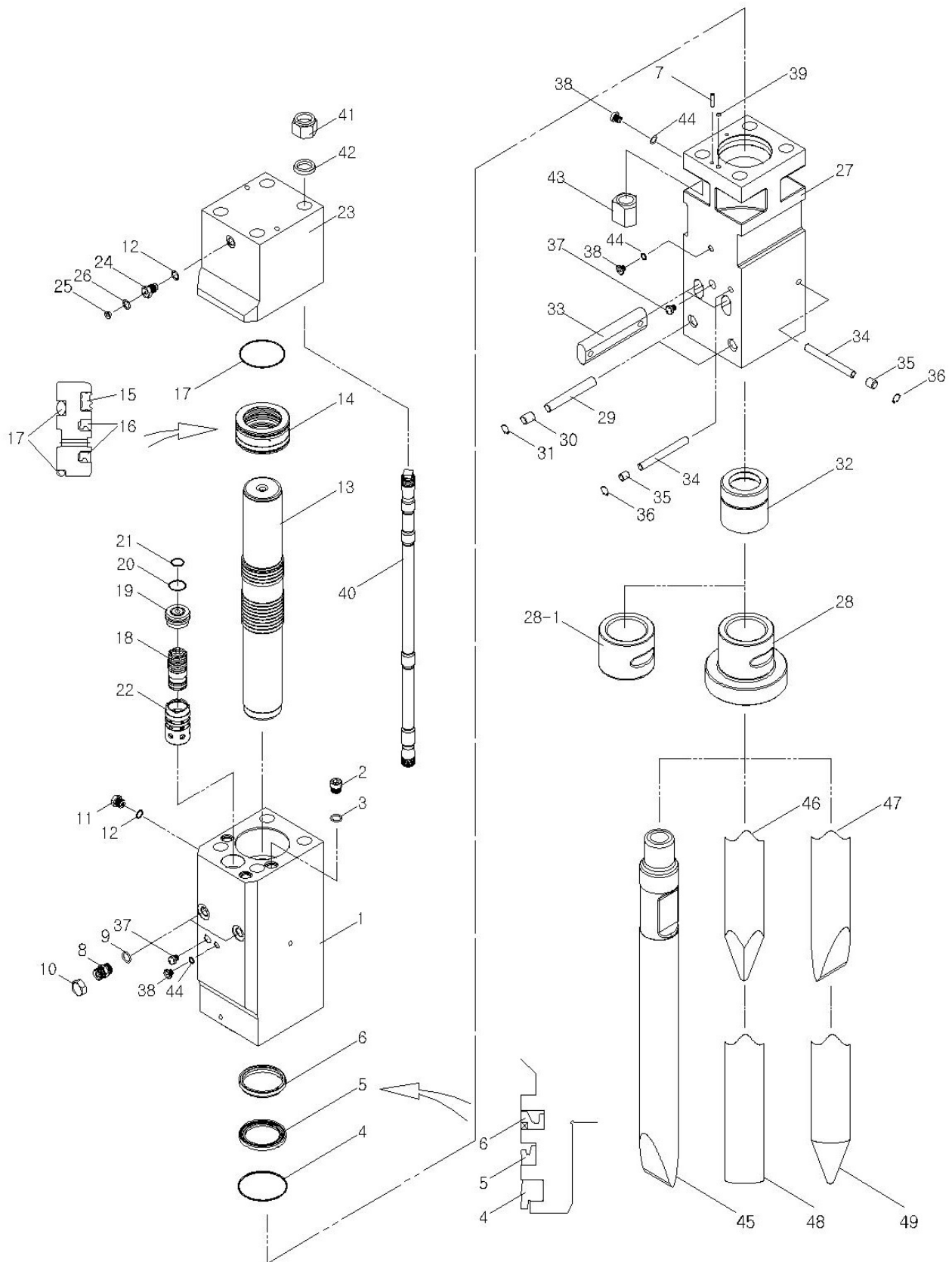
18	RP3/4"	IN/OUT PLUG	2	
19	RP884623	CHISEL PIN PLUG	2	
20	RP3516	STOP PIN PLUG	8	
21	RP4017X	GREASE PLUG	1	
22	RP1705016	ADAPTER PLUG	2	
23	HB3020270	HEX BOLT	1	
24	SW30	SPRING WASHER	1	
25	CN3020	CAP NUT	1	
26	1BP34	O-RING	10	

AT-450M (TOP)



NO	PART NO.	PART NAME	QTY	REMARKS
1	F45210	TOP BRACKET RIGHT	1	
2	F45220	TOP BRACKET LEFT	1	
-	F45800	SIDE BOLT ASSY	6	3~5
3	HB3020270	HEX BOLT	6	
4	SW30	SPRING WASHER	6	
5	CN3020	CAP NUT	6	
6	F45340	MOUNT CAP	1	
7	HB202590	HEX BOLT	12	
8	SW20	SPRING WASHER	12	
9	HN2025	HEX NUT	24	
-	F45700	PIN BUSH ASSY	2	10~14
10	F45710	MOUNT PIN	2	
11	F45720	T-BUSH	4	
12	F45730	STOP BAR	2	
13	HB1620170	HEX BOLT	2	
14	HN1620	HEX NUT	4	

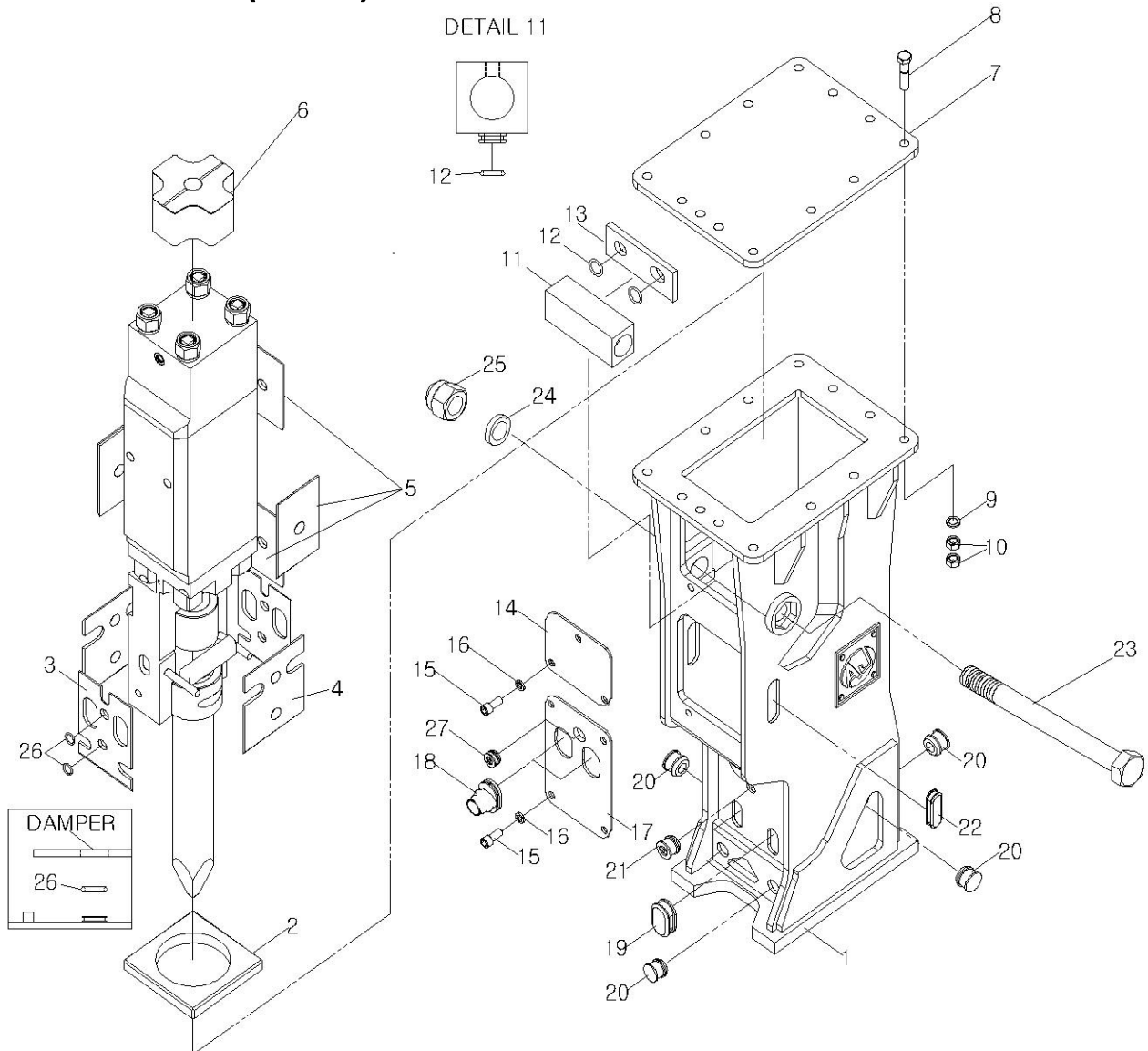
500M MAIN BODY



NO	PART NO.	PART NAME	QTY	REMARKS
-	A50100	MAIN BODY (TOP)	1	1~27,28,29~44
-	A50101	MAIN BODY (BOX)	1	1~27,28-1,29~44
-	N50100	SEAL KIT	1	
-	A50110	CYLINDER ASSY	1	1~22,36
1	B50110	CYLINDER	1	
2	D50210	SOCKET PLUG	3	
3	1BP22	O-RING	3	
4	DSI100	DUST SEAL	1	
5	ISI100	U-PACKING	1	
6	HBY100	BUFFER SEAL	1	
7	D40510	KNOCK PIN	1	
8	D45110	IN/OUT ADAPTER	2	
9	1BP24	O-RING	2	
10	D45120	ADAPTER CAP	2	
11	D10230	AIR CHECK VALVE	1	
12	1BP18	O-RING	2	
13	B50120	PISTON	1	
-	A50130	SEAL RETAINER ASSY	1	14~17
14	B50130	SEAL RETAINER	1	
15	GAS98	GAS SEAL	1	
16	ISI98	U-PACKING	2	
17	1BG135	O-RING	3	
-	A50300	VALVE ASSY	1	18~22
18	B50340	VALVE	1	
19	B50350	VALVE PLUG	1	
20	1BP52	O-RING	1	
21	1BG35	O-RING	1	
22	B50360	VALVE SLEEVE	1	
23	B50610	BACK HEAD	1	
-	D10640	GAS CHARGING VALVE ASSY	1	12,24~26
24	D10641	GAS CHARGING VALVE	1	
25	D10642	GAS CHARGING VALVE PLUG	1	
26	1BP16	O-RING	1	
-	A50500	FRONT HEAD ASSY (TOP)	1	27,28,29~39
-	A50510	FRONT HEAD ASSY (BOX)	1	27,28-1,29~39
27	B50510	FRONT HEAD	1	
28	C50530	LOWER BUSH (TOP)	1	
28-1	C50531	LOWER BUSH (BOX)	1	
29	C50560	BUSH PIN	2	
30	RP26	RUBBER PLUG	2	
31	SR26	SNAP RING	2	
32	C50520	UPPER BUSH	1	
33	C50540	CHISEL PIN	2	
34	C50550	STOP PIN	2	
35	RP18	RUBBER PLUG	2	
36	SR19	SNAP RING	2	
37	D10590	GREASE NIPPLE	2	
38	WP1/4"	WRENCH PLUG	3	
39	1BP14	O-RING	1	
-	A50700	THROUGH BOLT ASSY	4	40~43
40	C50710	THROUGH BOLT	4	
41	C50720	THROUGH BOLT TOP NUT	4	
42	C50730	THROUGH BOLT WASHER	4	
43	C50740	THROUGH BOLT BOTTOM NUT	4	
44	1BP11	O-RING	3	
45	K50100	H-WEDGE CHISEL	1	

46	K50200	MOIL POINT	1	
47	K50300	V-WEDGE CHISEL	1	
48	K50500	BLUNT CHISEL	1	
49	K50600	CONE CHISEL	1	

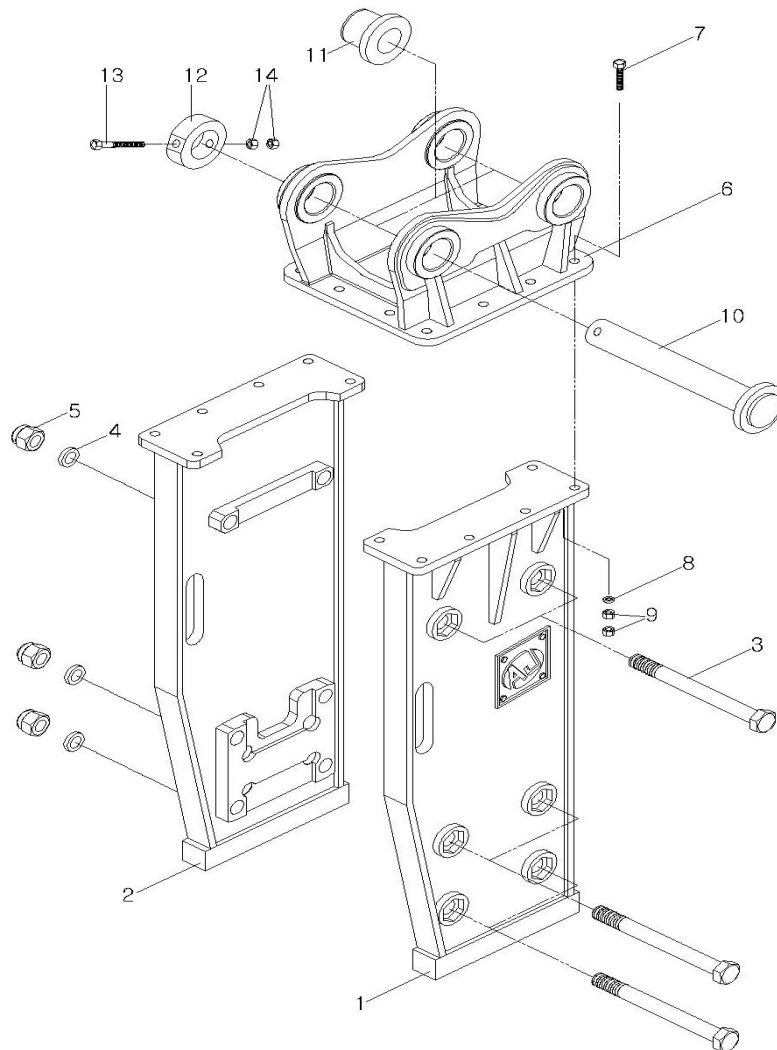
AB-500M (BOX)



NO	PART NO.	PART NAME	QTY	REMARKS
1	F50110	BOX BRACKET	1	
2	F50910	LOWER DAMPER	1	
3	F50930	FRONT PLATE	2	
4	F50940	FRONT SIDE PLATE	2	
5	F45960	SIDE PLATE (A)	4	
6	F50920	UPPER DAMPER	1	F50921 (105T)
7	F45320	UPPER PLATE	1	
8	HB202590	HEX BOLT	12	
9	SW20	SPRING WASHER	12	
10	HN2025	HEX NUT	24	
11	F50120	GUIDE BLOCK	1	
12	1BP24	O-RING	2	
13	F50950	GUIDE DAMPER	1	
14	F50140	COVER PLATE (A)	1	
15	WB162030	WRENCH BOLT	7	
16	SW16	SPRING WASHER	7	

17	F50150	COVER PLATE (B)	1	
18	RP3/4"	IN/OUT PLUG	2	
19	RP884623	CHISEL PIN PLUG	2	
20	RP3516	STOP PIN PLUG	8	
21	RP4017X	GREASE PLUG	1	
22	RP1705016	ADAPTER PLUG	2	
23	HB3630330	HEX BOLT	1	
24	SW36	SPRING WASHER	1	
25	CN3630	CAP NUT	1	
26	1BP34	O-RING	12	
27	RP4006X	AUTO PLUG	1	

AT-500M (TOP)



NO	PART NO.	PART NAME	QTY	REMARKS
1	F50210	TOP BRACKET RIGHT	1	
2	F50220	TOP BRACKET LEFT	1	
-	F50800	SIDE BOLT ASSY	6	3~5
3	HB3630330	HEX BOLT	6	
4	SW36	SPRING WASHER	6	
5	CN3630	CAP NUT	6	
6	F45340	MOUNT CAP	1	
7	HB202590	HEX BOLT	12	
8	SW20	SPRING WASHER	12	
9	HN2025	HEX NUT	24	
-	F45700	PIN BUSH ASSY	2	10~14
10	F45710	MOUNT PIN	2	
11	F45720	T-BUSH	4	
12	F45730	STOP BAR	2	
13	HB1620170	HEX BOLT	2	
14	HN1620	HEX NUT	4	