

MARUZEN

HYDRAULIC HANDHELD CHIPPING HAMMER

MODEL BH051 (053EX)

OPERATING MANUAL



CAUTION

FOR THE SAFETY PURPOSE, PLEASE READ THIS MANUAL THOROUGHLY BEFORE ATTEMPTING TO USE THIS BREAKER. ANY FALES OPERATING PROCEDURES WILL CAUSE DAMAGES OF THE MACHINE. ALWAYS KEEP THIS MANUAL TO AN EASILY ACCESSABLE PLACE.



MARUZEN KOGYO CO., LTD.

(Revised March 30, 2017)

FOREWORD

This manual is an important part of your equipment. It provides rules and guidelines which will help you use this machine safely and effectively. You **MUST** familiarize yourself with the functions and operations by reading the manual thoroughly before you begin using this machine. For your safety, it is especially important that you read and observe all precautions in this manual and labels on the machine. The precautions **MUST** be followed strictly at all times when performing operation and maintenance. * Fail to follow the guidelines and safety alerts in the manuals and on the machine, or use this machine in alternative ways from the manuals may result in system failure or serious personal injury.

Keep this manual with the equipment or in an easily accessible place in all times for future reference. Make sure all personnel involved in working on this machine can consult it periodically. In case this manual should be lost or damaged, immediately contact us or your dealer to purchase a new copy.

We recommend you always use Maruzen genuine components and parts. Replacing components and parts from other sources may cause damages to this machine and endanger operators.

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SAFETY INFORMATION

To enable you to use this machine safely, safety precautions and labels are given in this manual and affixed to the machine to give explanations of situations involving potential hazards and of the methods of avoiding such situations.

SAFETY ALERT CLASSIFICATIONS

The following safety alert symbols are used to inform you that there is a potential hazardous situation that may lead to personal injury or damage.

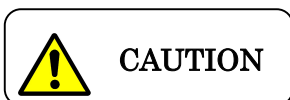
In this manual and on machines labels, the following safety alert symbol are used to express the potential level of hazard.



Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

**** Safety alert symbols are to emphasize all operation which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.**

SAFETY ALERTS

DO NOT OPERATE THE MACHINE UNLESS THE FOLLOWING SAFETY INSTRUCTIONS HAVE BEEN THOROUGHLY READ AND UNDERSTOOD!



WARNING

Before operating the equipment, be sure to wear personal protective equipments such as follows:

1. Helmet
2. Protective goggles
3. Protective boots
4. Safety gloves
5. Hearing Protection



WARNING

Do not operate the equipment if you are or if your

1. taking medication, feeling drowsy, feeling unwell or feeling tired.
2. under the influence of drugs or alcohol.
3. hands, feet, lower back or other parts of your body hurt or being injured.

* Failure to observe this precaution can result serious injury or even death.

**CAUTION**

Do not touch the machine with your bare hands

1. The oil tank may become hot under continuous running.
Do not touch the equipment with your bare hands.

2. Tools may become hot under continuous use, make sure to wear gloves before any contact with the tools.

* Failure to observe this precaution can result getting burned

**CAUTION**

When lending someone the equipment

Make sure the safety instructions have been thoroughly read and fully understood by the person who is going to use the equipment.

**WARNING**

Avoid Blank Hammering

Operating the equipment horizontally may cause the chisel's sudden flying out.

Excessive blank hammering may be considered equipment abuse and may cause equipment damage.

Failure to observe this precaution can result damage to the breaker.



WARNING

Never operate the breaker when bystanders are in the work area

1. Do not operate the breaker if any people are within the area where flying debris or movement of the breaker may injure them.
2. For preventing flying debris, make sure protection fences are being set up.

Failure to observe this precaution can result personal injury.



WARNING

Be special cautions to high pressure gas

1. High pressure gas was held inside the accumulator of the breaker.
2. Do not loosen the nut unless it is necessary for maintenance.

Failure to observe this precaution can result serious injury

INTRODUCTION

1. This hydraulic breaker is designed to be used for the following purposes.

(1) Chipping concrete and asphalt

2. **DO NOT** operate this breaker on the following situations:

(1) Drench part of the breaker or whole breaker into water or seawater.

(2) Connect with power source which its oil flow and pressure exceeds prescribed.

(3) Operating with oil temperature below 10°C or over 100°C.

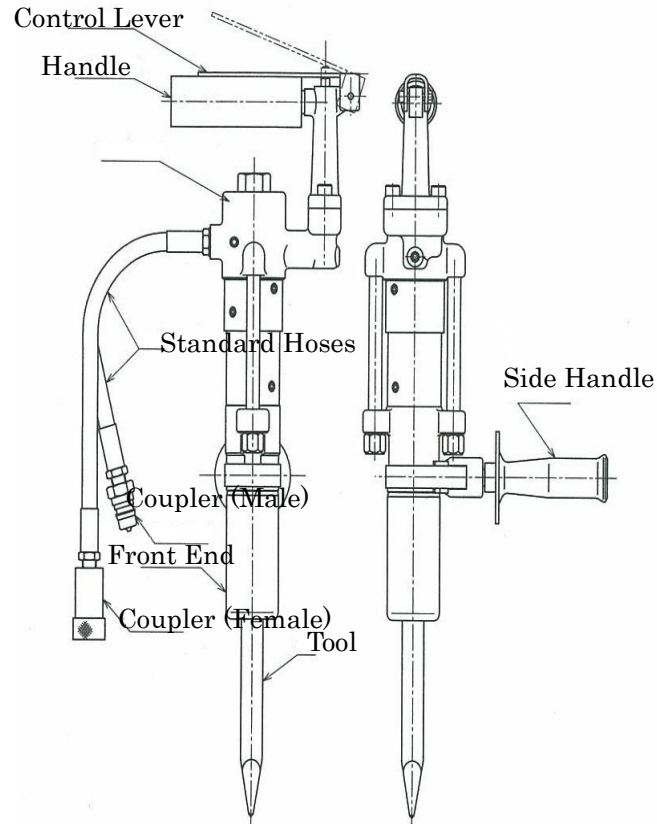
(4) Use tool which its shank size is different from prescribed

(5) Attach to other construction machinery.

(6) Use the equipment for purposes other than stated in this manual.

SPECIFICATIONS & DESCRIPTIONS

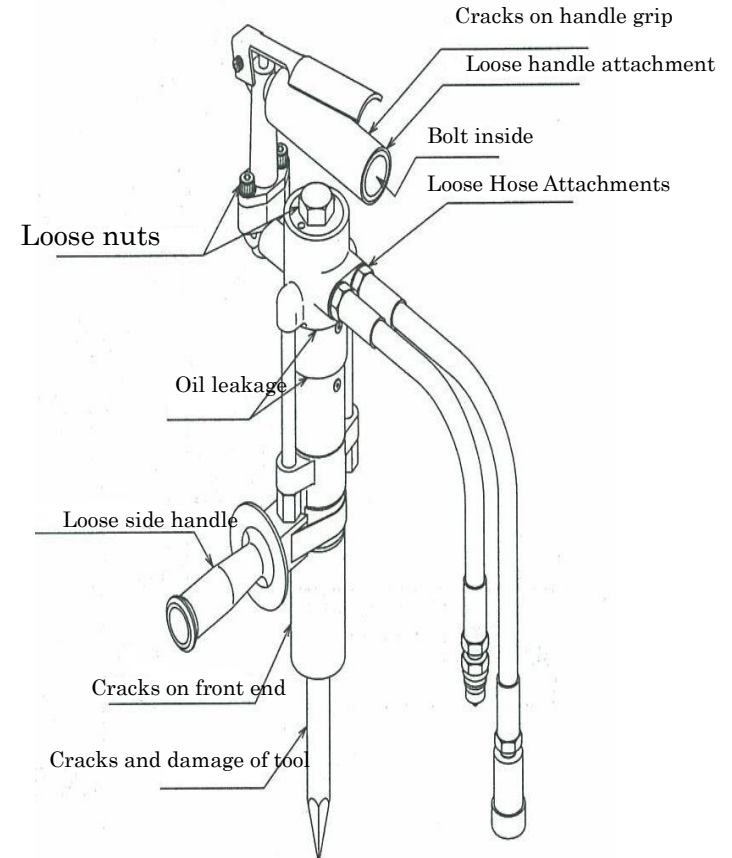
Overall Weight	5.5kg (Without tool)
Overall Dimensions	94mm X 138mm X 390mm
Working Pressure	70~120kgf/cm ² (6.8~11.8MPa)
Max. Pressure	210kgf/cm ² (20.6MPa)
Oil Flow	20L/min
Shank Size	∅ 17.5mm X 60mm Hex. 3/4" X 50mm
Coupling	3/8" Couplers
Max. Hose Length	1/2" X 10m
Optional	Side Handle



INSPECTIONS BEFORE EACH OPERATION

For the purpose of keeping the breaker in good condition, make sure the following inspection items are done each time before using. (Refer the drawing on the right)

Inspection Items	Countermeasures
1. Cracks on handle grip	Replace new one
2. Loose handle attachment	Tighten bolts
3. Loose hose attachments	Tighten hose attachments
4. Oil leakage	Ask Maruzen dealer for repair and maintenance
5. Loose of side handle	tighten grip part
6. Crack on front end	Replace new one
7. Cracks or damages of tools	Replacement



GUIDELINES

Following these guidelines while using this breaker:

1. When intend to use other power source (other than Maruzen hydraulic power units), make sure the pressure of the power source is in the range of 120 ~ 210kgf/cm² and oil flow is in the range prescribed
2. When connecting and disconnecting couplers, make sure dirt, dust and other foreign substance does not enter or attach to couplers and hoses.
3. Make sure the power source is OFF when connecting the breaker to the power source.
4. Maruzen original tools are highly recommended. Consult your dealer for more specifics of tools.
5. If the oil temperature is below 10°C, warm up the breaker before start operating.



6. Pay attention to the followings while operating the breaker.
 - (1) Be cautious for not being injured by the front of the tool.
 - (2) Be cautious for not being tripped by the extension hoses.
 - (3) Make sure there are no obstacles at jobsite. (Be cautious not being tripped by obstacles while operating)
 - (4) While pulling out the breaker from the broken objects, be cautions for not being fall over.
 - (5) Make sure the breaker was placed in horizontally. Fail to place the breaker horizontally after operating can cause injury by sudden falling of the breaker.
 - (6) Be cautious not to injure your back while lifting the breaker.
7. In case of sudden hydraulic hose breakage and hydraulic oil belch out. STOP the power source IMMEDIATELY.
8. Replace new hoses when they are worn or when oil exudes from them.
9. When detach couplers, a small amount of oil may slip out. Make sure that surrounding area does not get dirty by oil.
10. When detach from power source, attach two hoses to each other.

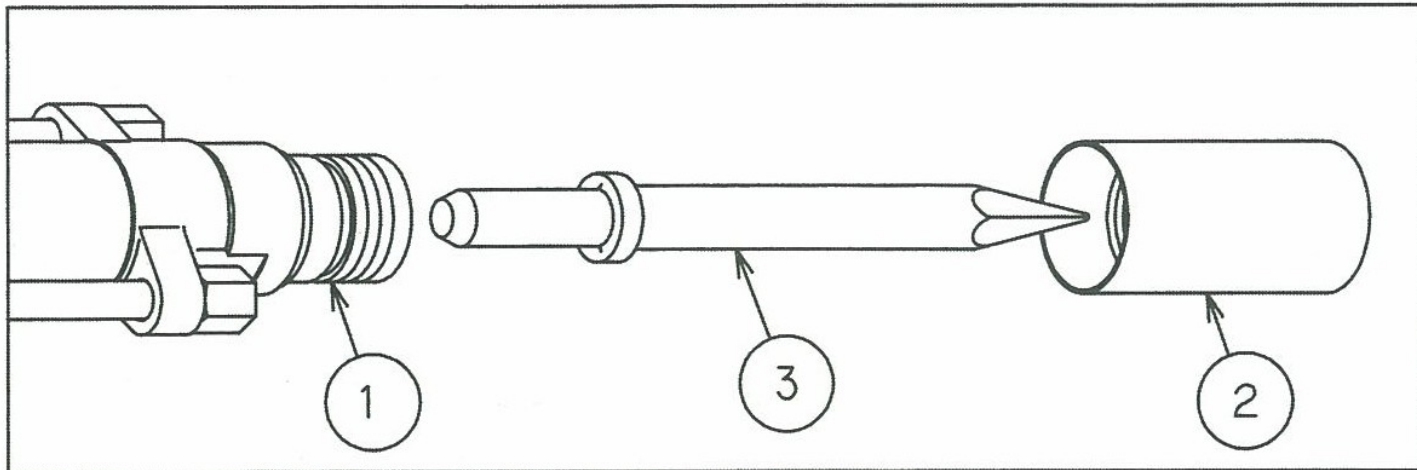
11. When frequently attach and detach to the power source, hydraulic oil will decrease accordingly. Always make sure the hydraulic oil level before operating and refill if necessary.
12. After the operation, use tool to push up the piston.



Immediately **STOP** the power source if the breaker does not stop after releasing the control lever. Ask Maruzen dealer for repair and service before the next operation.

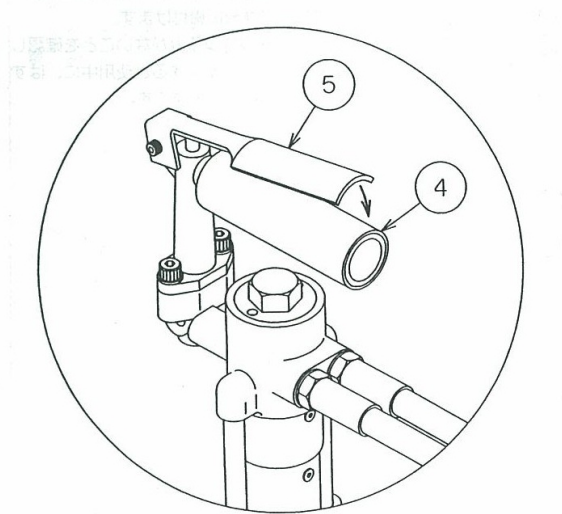
OPERATION

1. Connect the breaker with hydraulic power source.
2. Insert ③tool into ②front end and screw ①front end cap with front end.



3. Start hydraulic power source and warm up the engine before operating.

4.



Clasp chipping hammer's handle grip④, bear down the chipping hammer. Clasp the control lever⑤ gently and allow the shipping hammer to start running.

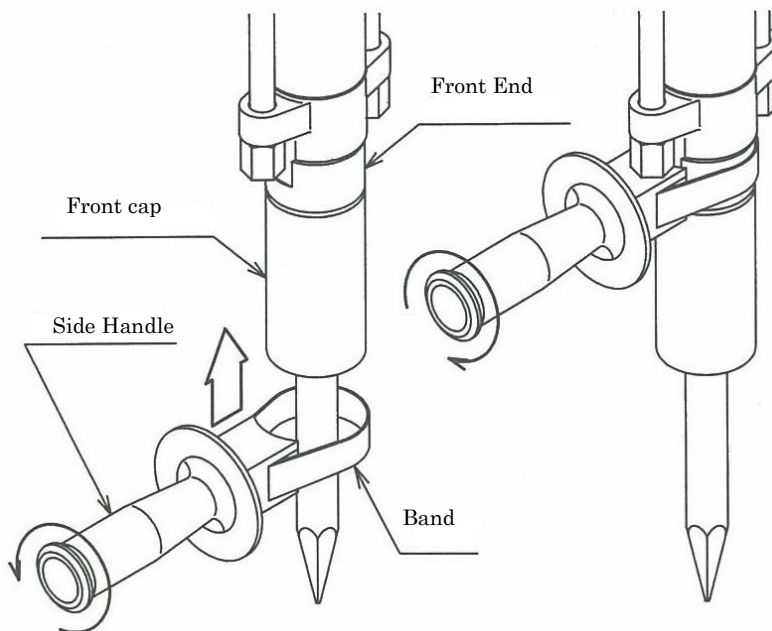
PERIODICAL INSPECTION

Ask your dealer for the periodical inspections.

Inspection Items	Operating Hours
Change O ring in valve rod	500 hours or 2 Year
Change U Cup Packing	500 hours or 2 years
Change all O rings	More than 3 years

INSTALLATION OF SIDE HANDEL

- (1) Place side handle on the flat part of front end of the breaker.
- (2) Set washers with bolts. Screw the bolts with torque $3.5\text{kgf} \cdot \text{m}$ ($34.3\text{N} \cdot \text{m}$)
- (3) Make sure if side handle has been installed firmly.



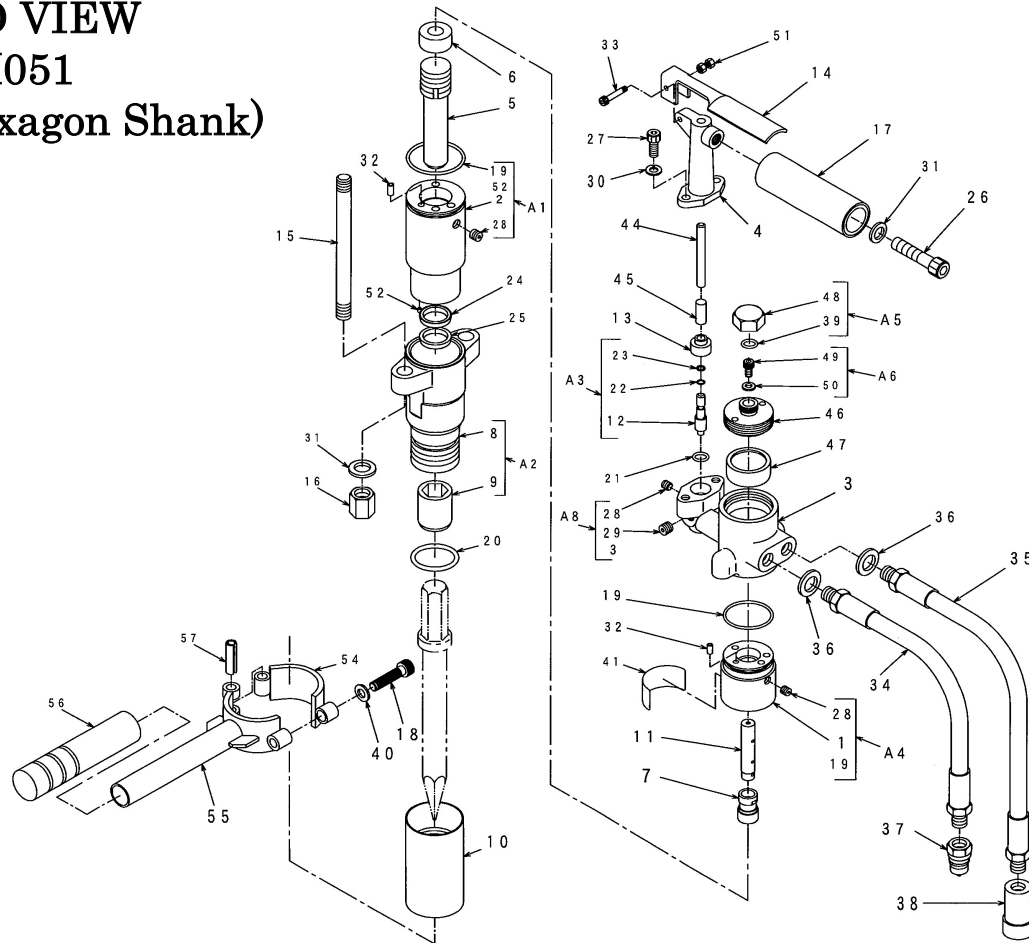
TROUBLE SHOOTING

Symptoms	Causes	Countermeasures
Grip the control lever but does not start	<ol style="list-style-type: none"> 1. Power source is off (Switch lever is not in ON position) 2. Hoses are not connected 3. Couplers are not connected properly 4. Relief valve pressure is set too low 5. Damage of control lever 6. Control lever is not functioning 7. High pressure side and oil return side was connected inversely 	<ol style="list-style-type: none"> 1. Start the power source (Turn the switch lever to On position) 2. Connect hoses 3. Check out if all the couplers have been connected properly 4. Adjust pressure to 120~210kgf/cm² (13.7~20.6MPa) * 5. Replace a new control lever * 6. Disassemble breaker, clean and remove dirt and dust between control lever and valve body * 7. High pressure hoses is connected to the upper side of the breaker
Functioning but weak hammering or low hammering speed	<ol style="list-style-type: none"> 1. Low rate of oil flow from power source 2. Pressure in relief valve in power source is set too low 3. Control valve does not function properly 4. Back pressure is too high 5. Temperature abnormally high 	<ol style="list-style-type: none"> 1. Turn the engine rotation rate up and increase the rate of oil flow (Adjust oil flow to the necessary rate) 2. Adjust pressure to the range of 120~210kgf/cm² (13.7~20.6MPa) * 3. Remove and clean the joint of control lever and valve body * 4. Use bigger Diameter hose for return side 5. Clean fan or radiator
Strong hammering and in high speed	<ol style="list-style-type: none"> 1. High rate of oil flow 	<ol style="list-style-type: none"> 1. Turn the engine rotation rate down to decrease the rate of oil flow

		(Adjust oil flow to the right range)
An abrupt stop during operation	<ol style="list-style-type: none"> 1. Couplers are not connected 2. Damage of control valve 	<ol style="list-style-type: none"> 1. Check each connected parts 2. Replace a control valve *
Oil leakage from control lever	<ol style="list-style-type: none"> 1. Damage, wear or harden of O ring 	<ol style="list-style-type: none"> 1. Replace O ring *
Profuse Oil leakage from front end	<ol style="list-style-type: none"> 1. Damage of U cup packing 2. Damage of U cup packing due to the scratch of piston rod. 	<ol style="list-style-type: none"> 1. Replace U cup packing * 2. Replace U cup packing, remove the scratch on piston rod *
High pressure hose shakes intensely	<ol style="list-style-type: none"> 1. Damage of accumulator diaphragm 	<ol style="list-style-type: none"> 1. Replace diaphragm *
Release the control valve but the breaker does not stop	<ol style="list-style-type: none"> 1. Foreign substance is caught in the valve rod 	<ol style="list-style-type: none"> 1. Disassemble, clean and adjust *

For items with *, ask Maruzen dealers for service and maintenance.

**EXPLODED VIEW
MODEL BH051
(BH053- Hexagon Shank)**



PARTS LIST MODEL BH051 (BH053- Hexagon Shank)

No.	Code	Descriptions	Q'ty	No.	Code	Descriptions	Q'ty
1	MB11Y201A	Valve Body	1	30	WF-8 (2-L)	Washer	2
2	MB11Y202A	Cylinder	1	31	WF-12-2L(JISB1252)	Washer	3
3	MB21X001A	Head Cover	1	32	PR-5*10	Spring Pin	2
4	MB17Y006A	Handle Stay	1	33	MB17Z016A	Bolt	1
5	MB11Z204A	Piston	1	34	21091 · 3-30··	High Pressure Hose 300mm	1
6	MB11Z205A	Piston Guide	1	35	21091 · 3-45··	High Pressure Hose 450mm	1
7	MB11Z206A	Control Valve	1	36	WS-18<<<<<<<<<BH	Seal Washer	2
8	MB11Y008A	Front End	1	37	QC-03M	Coupler, Male	1
9	MB11Z208A	Chisel Bushing	1	38	QC-03F	Coupler, Female	1
10	MB11Z213A	Front Cap With Eccentric Hole	1	39	OS-22.4	O Ring	1
11	MB11Z207A	Piston Rod	1	40	WS-8	Washer	1
12	MB17Z013A	Valve Rod	1	41	---	---	---
13	MB11Z013A	Valve Guide	1	42	---	---	---
14	MB17Z008A	Control Lever	1	43	---	---	---
15	MB11Z210A	Stud Bolt	2	44	MB17Z005A	Pin	1
16	1034-703	Nut, Stud Bolt	2	45	MB17Z017A	Spacer	1
17	MIKTE119A	Handle Grip	1	46	MB17Z004A	Lid	1
18	BH-8X35	Bolt	1	47	MB17Z002A	Diaphragm	1
19	OS-48	O Ring	2	48	M2LTE115A	Cap	1
20	OP-40	O Ring	1	49	1120-413	Cap Bolt	1
21	OP-16	O Ring	1	50	WS-06<<<<<<<<BH	Seal Washer	1
22	OP-5	O Ring	1	51	N-5	Nut	2
23	OBP-5	Back-up Ring	1	52	MB850-040	Expander	2
24	IUIS-20-28-5	U Cup Packing	1	53	---	---	---
25	LBI20,28,4.5,6	Dust Seal	1	54	MB21Z006A	Half	1
26	BH-12*50	Bolt, Hex Socket 12*50	1	55	MB21Z007A	Handle Stay	1
27	BH-8*20	Bolt, Hex Socket 8*20	2	56	C-30B	Line Grip	1
28	BPH1-PT1/16	Taper Plug, Hex Socket 1/16"	7	57	PR-8*30	Spring Pin	1
29	BPH1-PT1/8	Taper Plug, Hex Socket 1/8"	1				

PARTS LIST MODEL BH051 (BH053- Hexagon Shank)

A1	MB21Z501A	Accumulator Assy	2, 19, 28 (2), 52 (2)	1
A2	MB21Z502A	Front End Assy	8, 9	1
A3	MB21Z503A	Valve Rod Assy	12, 22, 23	1
A4	MB21Z504A	Valve Body Assy	1, 19, 28 (3)	1
A5	M2LTZ508A	Valve Body Assy	39, 48	1
A6	MB24Z509A	Cap Bolt Assy	49, 50	1
A7	MB21Z008A	Side Handle Assy	18, 40, 54, 55, 56, 57	1
A8	MB21Z508A	Head Cover Assy	3, 28 (2), 29	1
A9	MB21Z509A	Seal Kit	19 (2), 21, 22, 23, 24, 25, 36 (2), 39, 50	1