

MARUZEN

HYDRAULIC HANDHELD BREAKER

MODEL BH112V

(Anti-Vibration Model)

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 April 5th, 2010)

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.

MARUZEN KOGYO CO., LTD.
155-8 NAGABUSE, MISHIMA-SHI,
SHIZUOKA-KEN, 411-0824, JAPAN

CONTENTS

Safety Information.....	4 ~ 8
Safety Alert Classifications.....	4
Safety Alerts	5 ~ 8
Introductions	9
Specifications & Descriptions.....	10
Precaution Labels and Positions	11
Inspection before Each Operation.....	12
Operation.....	13 ~ 14
Guidelines	15 ~ 16
Installation of Side Handle.....	16
Inspections	17
Tools & Applications	17
Troubleshooting.....	18 ~ 20
Exploded View	21
Parts List.....	22 ~ 24
EC Declaration of Conformity	25

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.

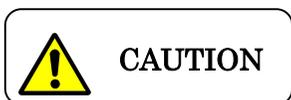
In this manual and on machines labels, the following safety alert symbol are used to express the potential level of hazard.



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.

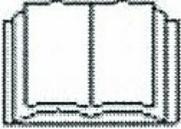


Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

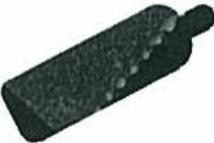
**** Safety alert symbols are to emphasize all operation which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.**

SAFETY ALERTS

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

	 WARNING
	Read and understand operating manual before operating.

	 WARNING
	Be Cautious About High Pressure Hydraulic Oil There is a risk of sudden breakage of hydraulic hoses which causes the oil inside belch out. <ol style="list-style-type: none">1. Relief the pressure inside before disconnecting hoses.2. DO NOT inspect oil leakage with your bare hands. Because oil leakage is very often not noticeable, ALWAYS use cardboard or wood pieces to assist your inspection

	 WARNING
	Be Cautious About High Pressure Gas <ol style="list-style-type: none">1. High pressure nitrogen gas was installed inside accumulator.2. DO NOT untighten the cap from the top of the breaker. * Failure to observe this precaution can result personal injuries.



WARNING



Be Cautious About High Heat

1. Following by rapid raise of the oil temperature, the temperature of the machine goes up while and after the operation. **DO NOT** touch the machine with your bare hands.
2. The temperature of tools will also raise while or after the operating. **BE SURE** that you always wear protective equipments while handling tools.

* Failure to observe this precaution can result getting burned.



WARNING



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

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

* Failure to observe this precaution can result serious personally injuries.

**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**

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

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.

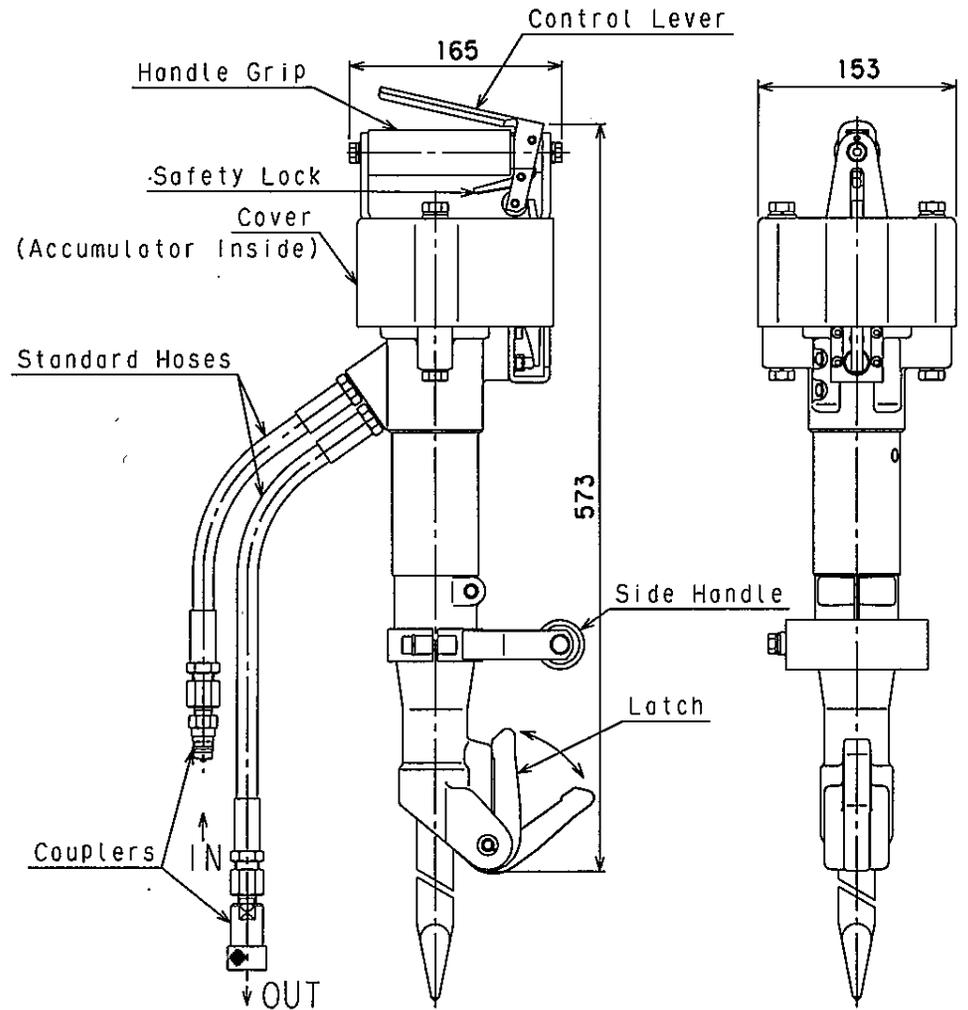
INTRODUCTION

1. This hydraulic breaker is designed to be used for the following purposes.
 - (1) Breaking concrete and asphalt
 - (2) Anchoring and pile driving
 - (3) Digging or breaking hard soil
 - (4) Compacting soil
 - (5) Cutting asphalt

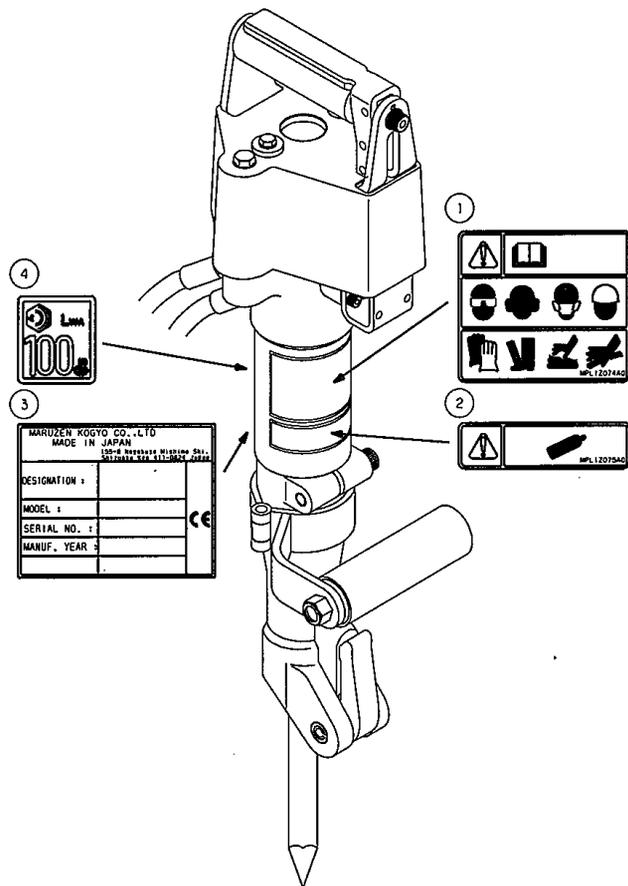
2. **DO NOT** operate this breaker under the following situations:
 - (1) Drench part of the breaker or whole breaker into water or seawater.
 - (2) Connect with power source which its oil flow and pressure exceeds the breaker's allowable range.
 - (3) Operating with oil temperature below 10°C or over 100°C.
 - (4) Use shank which its size is different from prescribed.
 - (5) Attach to other construction machinery.
 - (6) Use the equipment for purposes other than stated in this manual.
 - (7) Use parts other than Maruzen genuine ones.
 - (8) Connect with extension hose its length exceeds 1/2 in x 10m.

SPECIFICATIONS & DESCRIPTIONS

Overall Dimensions	L573 x W165 x T 153mm
Overall Weight	13 Kg (Tool excluded)
Working Pressure	8.8~12.7MPa
Max. Pressure	20.6 MPa
Oil Flow	15~20L/min
Blow Per Minute	1450 bpm (at 20L/min)
Vibration Level(ISO08662-5)	Z= 6.2 m/s ²
Sound Power (200/14/EC)	
-Measured Sound Power Level	Lwa = 99 dB(A)
-Guaranteed Sound Power Level	Lwa =100 dB
Shank Size	7/8 in HEX x 83 mm
Coupling	3/8 in couplers
Allowable Back Pressure	2.5MPa
Extension Hose	3/8 in x 10m (at 20 L/min)
Recommended Hydraulic Oil	ISO VG32 or equivalent



PRECAUTION LABELS AND POSITIONS



Precaution Labels are to remind you to be extra cautious for potential hazards. It is extremely important that all the safety precaution labels are legible in all time. Replace new once when they are illegible.

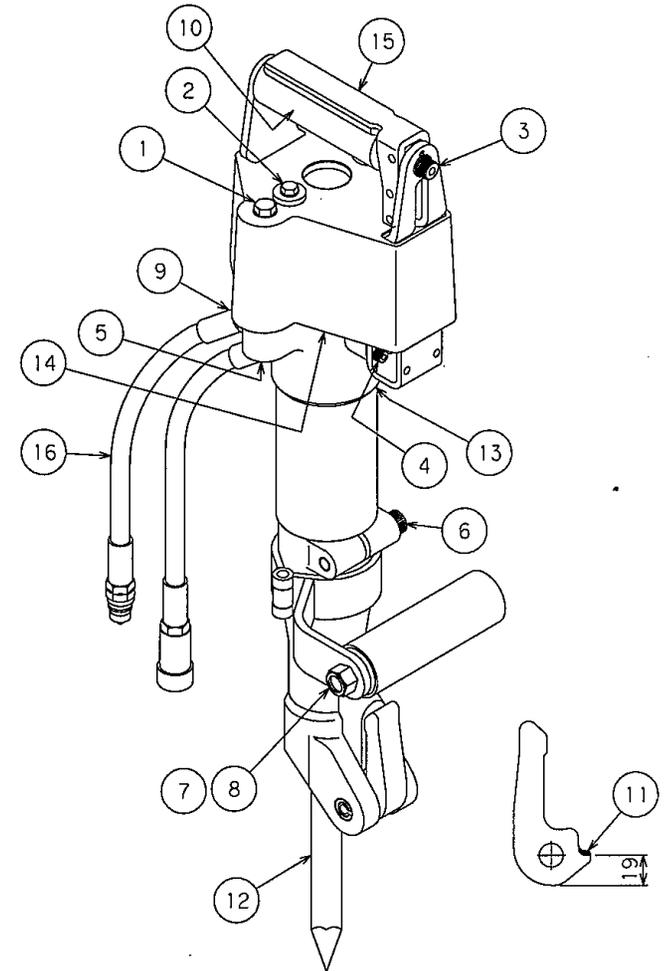
Order your precaution labels from your nearest Maruzen dealer.

	Code	Description
①	MPL1Z074A0	Label BY (WARNING)
②	MPL1E075A1	Label BZ (WARNING)
③	MPL2Z001A1	CE Sticker (in French)
	MPL2Z002A1	CE Sticker (in English)
	MPL2Z003A1	CE Sticker (in Italian)
④	MPL2Z006A0	Sound Power Level Sticker (100)

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. Loose bolts ①②③④⑤⑥⑦⑧	Tighten the loosen bolts
2. Loose hose attachment ⑨	Tighten hose attachment
3. Wears on handle grips ⑩	Replace new one when wears are found
4. Wears on Latch ⑪	Replace a new one when wears are found. (Refer to the drawing on the right)
5. Damage, cracks on tool ⑫	Replace new one when damages and cracks on tools are found
6. Oil leakage ⑬⑭	Ask your dealer for repair and service
7. Cracks on control lever ⑮	Replace new ones when cracks are found
8. Damage of hoses ⑯	Replace new ones when wires damage are found

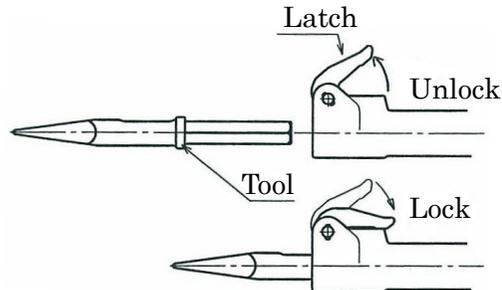


OPERATION

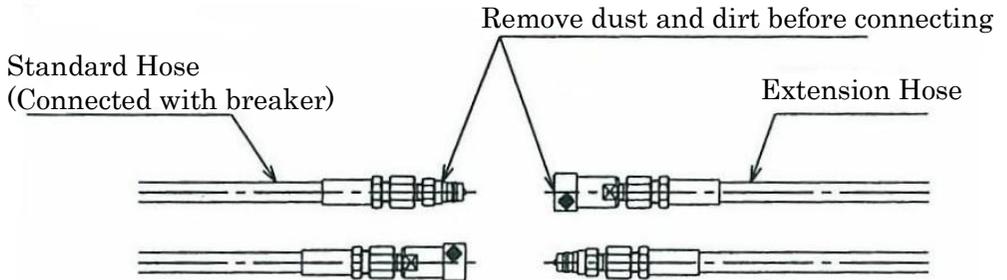
Always make sure the breaker is connected to a power source which is in the appropriate range as prescribed in page 10.

1. Preparations

- 1) Unlock the latch on the breaker and insert tool (moil point, etc)
Turn around the tool (if the tool is hexagon) if it stuck on the half way of the inserting.
- 2) Lock the latch. Make sure the tool is firmly fastened.



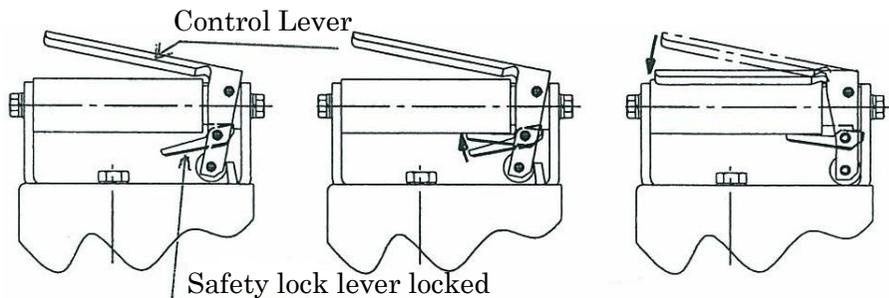
- 3) Make sure there is no dust or dirt inside couplers before connecting breaker to hydraulic power pack.



- 4) Active the power source. (Start the engine on the power pack)

2. Operation

- 5) The breaker and the breaking target should be on a right angle. Press down the breaker with your weight. Grip the safety lock lever and then control lever. The machine will start function.



- 6) Do not hammer the same place for over 30 seconds. If the target object does not break within 30 seconds, change the hammering point.
 - 7) Do not blank hammering for over 10 seconds.
3. End of work
- 8) Stop the power pack after the job is completed
 - 9) Push up the tool so that piston returns to its position.
 - 10) Detach the extension hoses.
 - 11) Attach both couplers on the breakers together. This is to prevent dust and dirt into couplers and hoses.
 - 12) Unlock latch, remove tool from the main body.
 - 13) Remove mud and dirt on breaker thoroughly.

GUIDELINES

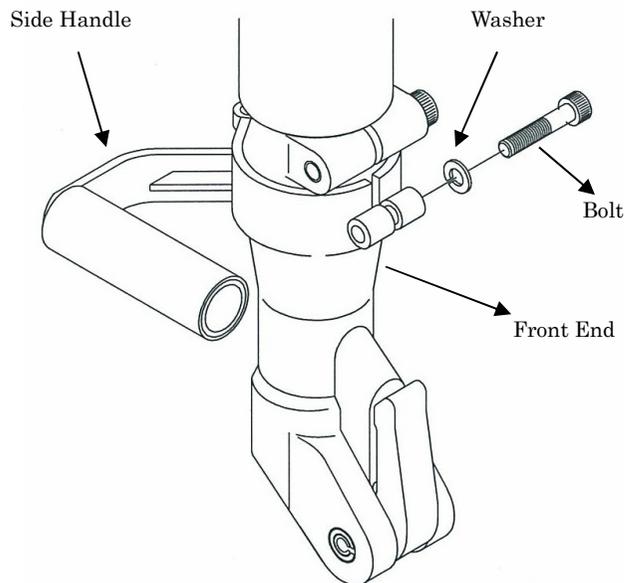
Following these guidelines while using this breaker:

1. Maruzen genuine tools are highly recommended.
2. Consult your nearest Maruzen dealer if you intend to use power source other than Maruzen produced hydraulic power units.
3. 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 cautious for not being fall over.
 - (5) Make sure the breaker was placed in horizontally after the operation. 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.
4. Piston has to be pushed up to the end for storage after each operation.
5. After disconnecting the hoses between power unit and breaker. Connect both couplers on breaker together for preventing dirt and dust enter from couplers.
6. If the breaker does not stop after releasing the control lever, **STOP** the power source **IMMEDIATELY**. Ask your nearest Maruzen dealer for repair and service before the next operation.
7. In case of sudden hydraulic hose breakage and hydraulic oil belch out. **STOP** the power source **IMMEDIATELY**.
8. When detach couplers, a small amount of oil may slip out. Make sure that surrounding area does not get dirty by oil. 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.
9. Always **STOP** the power source while install or uninstall tool.
10. Always **STOP** the power source while connecting or disconnecting the breaker to the power source.
11. When connecting and disconnecting couplers, make sure dirt, dust and other foreign substance does not enter or attach to couplers and hoses.
12. If the oil temperature is below 15°C, warm up the machinery before start operating.

13. Intend to store the breaker for a longer period of time
- (1) Connect the breaker with a power source, use D 15~20mm x L200mm wood bar to push up the piston.
 - (2) Apply anti-rust on piston.
 - (3) Apply oil on the body of the breaker and clean it with a wet cloth.
Cover the breaker with a cover and store it in a low humidity place.

INSTALLATION OF SIDE HANDLE (OPTIONAL)

- (1) Attach side handle on the flat side of the breaker(Refer to the drawing below)
- (2) Attach Washer to the bolt and screw the bolt tightly (34.3N · m)
- (3) After the installation, double check if the side handle is firmly attached to the breaker.



INSPECTIONS

1. Daily Inspections

- (1) Check oil leakage from breaker, hoses, etc.
- (2) Check if there are any cracks on tools.

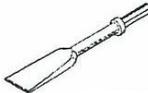
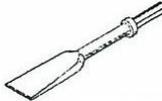
2. Periodical Inspections

Ask your Maruzen dealer for the periodical inspections.

Inspection Items	Operating Hours
Nitrogen gas charge in accumulator	250 hours or 1 Year
Replacement of accumulator diaphragm	500 hours or 2 years
Replacement of Valve Rod O ring	500 hours or 2 years
Replacement of U-cup packing	500 hours or 2 years
Replacement of each O ring	More than 3 years

* The charging pressure of nitrogen gas in accumulator is 3.9MPa

TOOLS AND APPLICATIONS

Tools	Images	Applications
Moil Point		Breaking
Concrete Chisel		Breaking
Frost Chisel		Cutting and Breaking
Asphalt Cutter		Cutting and digging out asphalt
Shovel		Digging out hard soil
Tamping Rammer		Compacting soil or sand

TROUBLE SHOOTING

Symptoms	Causes	Countermeasures
Grip the control lever but does not start	1. Power source is off	1. Active the power source
	2. Switch Lever on Power unit is still in "OFF" position	2. Turn the switch lever on power unit to "ON" position
	3. Couplers are not connected	3. Connect all the couplers
	4. Couplers are not properly connected	4. Check if there are couplers which are not properly connected
	5. Relief valve pressure is set too low	5. Adjust pressure to 11.7~20.6MPa) *
	6. Damage of control lever	6. Replace a new control lever*
	7. Control Lever does not function	7. Disassemble breaker, clean and remove dirt and dust between control lever and valve body*
	8. Inlet and outlet port have been connected inversely to the wrong hoses.	8. High pressure hose is to connect to the upper side and low pressure hose is to connect to the lower side.
	9. Draw Bolt is not firmly tightened.	9. Draw Bolt should be tightened according to "Maruzen Standard Torque" *
	10. Hydraulic oil does not flow smoothly due to the damage of couplers	10. Replace new couplers *
Weak hammering or low hammering speed	1. Low rate of oil flow from power source	1. Turn the engine rotation rate up and increase the rate of oil flow (Adjust oil flow to the necessary rate) - Check the discharge volume of hydraulic pump

	2. Pressure in relief valve on power unit was set too low	2. Adjust the pressure to 11.7 ~ 20.6MPa*
	3. Control valve does not function properly	3. Remove and clean the joint of control lever and valve body *
	4. Back pressure is too high	4. Use bigger Diameter and shorter hose for return side to make the back pressure to be lower than 2.5MPa.
	5. Low rate of hydraulic oil	5. Refill hydraulic oil
Hammering in normal speed but weak	1. Low accumulator gas pressure	1. Refill Nitrogen gas for the pressure of 3.9MPa
	2. Damage of accumulator diaphragm	2. Replace diaphragm *
	3. Oil temperature goes higher than usual	3. Check the power source. Clean the radiator and fan on the power source.
Strong hammering and in high speed	1. High rate of oil flow	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	1. Couplers get disconnected	1. Check each connected parts
	2. Damage of control valve	2. Replace a control valve *
Oil leakage from control lever	1. Damage, wear or harden of O rings	1. Replace O rings *
Profuse Oil leakage from front end	1. Damage of U cup packing	1. Replace U cup packing *

	2. Damage of U cup packing due to the scratch of piston rod.	2. Replace U cup packing, remove the scratch on piston rod *
Latch is nearly coming off	1. Damage of lock spring	1. Replace lock spring *
	2. Wear of latch	2. Replace latch *
High pressure hose shakes intensely	1. Damage of accumulator diaphragm	1. Replace diaphragm *
Release the control valve but the breaker does not stop	1. Foreign substance is caught in the valve rod	1. Disassemble, clean and adjust *

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

PARTS LIST MODEL BH112V

No.	Code	Descriptions	Q'ty	No.	Code	Descriptions	Q'ty
1	MB28X009A	Valve Body	1	29	OBP – 14	Back Up Ring	1
2	M2LTC102A	Front End	1	30	OBP – 5	Back Up Ring	1
3	M2LTD103A	Shell	1	31	WS – 18	Seal Washer	2
4	M2LTD104B	Cylinder	1	32	WS – 16	Seal Washer	1
5	M2LTD125A	Piston (B)	1	33	BH – 8 x 80	Bolt	4
6	M2LTE107A	Chisel Bush	1	34	BH – 8 x 15	Bolt	4
7	M2LTE108A	Valve Guide	1	35	BH – 10 x 50	Bolt	1
8	M2LTE109A	Lid (S)	1	36	PR – 16 x 50	Pin	1
9	M2LTE124A	Inner Tube (B)	1	37	PR – 10 x 50	Pin	1
10	M2LTE115A	Cap	1	38	PR – 6 x 16	Pin	1
11	QB – 5/16	Steel Ball	1	39	MIKTE173A0	Lock Pin	1
12	MIXTE108A	Control Valve	1	40	21091 • 3 • 35 • •	High pressure Hose	1
13	MIHTE107A	Spring (P)	1	41	21091 • 3 • 50 • •	Low Pressure Hose	1
14	1120 – 413 – D	Cap Bolt	1	42			
15	MB02E006A	Diaphragm	1	43			
16	MIKTE111A	Valve Rod	1	44	BPH1 – PT1/8	Plug	10
17	1120 – 419 – A	Latch	1	45	1120 – 414	Handle Grip	1
18	1110 – 410 – 01	Lock Spring	1	46	MB19Z047A	Collar	2
19	IUIS – 30 – 40 – 6	U Cup Packing	1	47	MB28Y007A	Cover	1
20	DS-30385	Dust Seal	1	48	MB28Z006A	Control Lever	1
21	OG – 60	O Ring	1	49	AWSC – E – D12 – V6.5 – T5	Metal Washer	1
22	OS – 70	O Ring	1	50	1120 – 422	Grip Shaft	1
23	OP – 22	O Ring	1	51	MB28Z002A	Lever	1
24	OP – 5	O Ring	1	52	SAMINI – 7132	Spring	1
25	OP – 14	O Ring	1	53	PR – 6 x 28	Pin	4
26	OP – 12.5 (1B)	O Ring	1	54	FNCLCH – V6.5 – D20 – L16	Metal Collar	1
27	OS-22.4	O Ring	1	55	MB02E023B	Handle Stay(M)	1

28	OBP – 22	Back Up Ring	1	56	MB02E024B	Handle Stay (S)	1
No.	Code	Descriptions	Q'ty	No.	Code	Descriptions	Q'ty
57	1120 – 422	Grip Shaft	1	83	B – 6 x 12	Bolt	2
58	1120 – 414	Handle Grip	1	84	WS – 6	Washer	2
59	B – 8 x 16	Bolt	2				
60	WS – 8	Washer	2				
61	BH – 8 x 35	Bolt	1				
62	PR – 8 x 30	Pin	1				
63							
64							
65	MB28Z004A	Block	1				
66	MB28Y008A	Handle Stay	1				
67	PR – 4 x 10	Pin	1				
68	WS – 8	Washer	2				
69	BH – 8 x 45	Bolt	1				
70	MB26Z018A	Collar	1				
71	BH – 8 x 20	Bolt	1				
72	FRN1A3 – A60 – V34	Rubber Seat	2				
73	SAMINI – 5525	Spring	4				
74	MB28Z003A	Guide Pipe	2				
75	AWSC – E – D25 – V16.5 – T5	Metal Washer	1				
76	MB28Z001A	Cam Support	1				
77	B – 10 x 25	Bolt	4				
78	WS – 5	Washer	4				
79	BH – 5 x 15	Bolt	4				
80	MB28Z005A	Cam	1				
81	WSSB25 – 10 – 3	Metal Washer	2				
82	WS – 10	Washer	2				

No.	Code	Descriptions	Q'ty	
A1	M2LTZ501A	Accumulator Assy	1	3,8,10,14,15,23,27,28,32
A2	M2LTZ502A	Cylinder Assy	1	4,44
A3	M2LTZ503A	Inner Tube Assy	1	9,11,13,44
A4	M2LTZ505A	Front End Assy	1	2,6,35
A5	M1XTZ505A	Valve Rod Assy	1	16,24,30
A6	M2LTZ506A	Valve Guide Assy	1	7,25,26,29
A7	MB28Z012A	Valve Body Assy	1	1,44
A8	M2LTZ508A	Cap Nut Assy	1	10,27
A9	MB24Z509A	Cap Bolt Assy	1	14,32
A10	MB02E031A	Side Handle Assy	1	55,56,57,58,59,60,61,62
A11	M2LTZ511A	Seal Kit	1	19,20,21,22,23,24,25,26,27,28,29,30,31,32

EC DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITE EC
EC-KONFORMITÄTSEKLRUNG
EC-VERKLARING VAN OVEREENSTEMMING



MARUZEN KOGYO CO., LTD
155-8 NAGABUSE MISHIMA-SHI
SHIZUOKA KEN 411-0824 JAPAN

Declare that the machine described below
Déclare que la machine décrite ci-dessous
Eklärt, da β die unten beschriebene Maschine
Verklaart dat onderstaande beschreven machine

Hydraulic Breaker/ Marteau Hydraulique / Martello Idraulico / Hydraulik Hämmer
BH112V

Serial number/Numéro de série/Serien nummer/Reeksnummer/ : 7B001 ~

Complies to the provision of the “machinery directive” 98/37/EC
est conforme aux dispositions de la directive “machines” 98/37/EC
mit den Anforderungen der Richtline 98/37/EC übereinstimmt
overeenstemt met de voorschriften inzake “machine richtlijnen” 98/37/EC

Also complies with the provisions of the “noise emission by equipment for use outdoors” 2000/14/EC
est également conforme aux dispositions de la directive “emission sonore des equipments utilisés à l’extérieur des bâtiments” 2000/14/EC
Und auch die Richtline “Geräuschemissionen von zur Verwendung im Freien vorgesehen Geräten und Maschinen” 2000/14/EC
Stemt eveneens overeen met de voorschriften inzake “geluidsproductie door het materieel veroorzaakt buiten de gebouwen” 2000/14/EC

Service Weight: 14 kg
Measured Sound Power Level: $L_{wa} = 99\text{dBA}$
Guaranteed Sound Power Level: $L_{wa} = 100\text{dBA}$

Notified Body:

LNE (No. 0071)
1, rue Gaston Boissler
75724 Paris Cedex 15 France

Manager/le directeur/Direktor/Direttore

Yukio Suwabe