

MARUZEN

HYDRAULIC HANDHELD POST DRIVER

MODEL KH192

OPERATING MANUAL

ORIGINAL INSTRUCTIONS



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



MARUZEN KOGYO CO., LTD.

March.13.2023

FOREWORD

This manual is intended for use by those who have undergone training at the manufacturer or dealer.

This manual is an important part of your tool. It provides rules and guidelines that will help you to 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 the labels on the machine. The precautions **MUST** be followed strictly at all times when performing operation and maintenance.

* Failure to follow the guidelines and safety alerts presented in the manuals and on the machine, or use of this machine for any other purpose than described in the manual, may result in system failure or serious personal injury.

Keep this manual with the tool and in an easily accessible place 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 that you always use Maruzen genuine components and spare parts. Using components and spare parts from other sources may cause damage to this machine and endanger operators.

MARUZEN KOGYO CO., LTD.

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SAFETY INFORMATION

To enable you to use this machine safely, safety precautions are presented in this manual and labels are affixed to the machine to provide explanations of situations involving potential hazards and how to avoid them.

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 machine labels, the following safety alert symbols are used to express the potential level of hazards.



Indicates an imminently hazardous situation which, if not avoided, **WILL** likely 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, **MAY** result in minor or moderate injury.

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

SAFETY ALERTS

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

	Read and understand all of the instructions and safety information in this manual before operating.
	Wear eye protection.
	Wear ear protection.
	Wear a dust mask.
	Wear a helmet.
	Wear protective gloves.
	Wear foot protection boots.
	Do not touch oil with your bare hands.
	Main body will be hot during and after use. Do not touch it with your bare hands.
	Contains high pressure gas.

SAFETY PRECAUTIONS

Failure to observe following precautions can cause personal injury or damage to the tool.



DANGER

Keep this manual and its enclosures in a safe dry place, so they can be always available for future consultations.

【FAILURE TO OBSERVE THESE WARNINGS】

WILL likely result in death or serious injury.



WARNING

Wear appropriate clothing and safety protections for operation.

- (1) Wear tight-fitting clothes and avoid operating with short pants or t-shirts, or other clothes which bare parts of the body is exposed. Pay attention to long loose hair and gather them to prevent them get in contact with moving parts or get trapped.
- (2) ALWAYS wear following safety protections when operating.
 - ①Helmet – To protect head from obstacles during work
 - ②Protective shoes – To protect from falling objects
 - ③Safety gloves – To protect against burns and bruises caused by hot part
 - ④Ear protections – To protect from noise disturbance

【FAILURE TO OBSERVE THESE WARNINGS】

COULD lead to unexpected accidents.



WARNING

Do not operate the tool if:

- (1) you are taking medication, feeling drowsy, unwell, or tired.
- (2) you are under the influence of drugs or alcohol.
- (3) your hands, foot, lower back or other part of your body hurts or injured

【FAILURE TO OBSERVE THESE WARNINGS】

COULD result in serious injury or even cause death.

When lending the tools to someone:

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

【FAILURE TO OBSERVE THESE WARNINGS】

COULD result in serious injury or damage to the tool.

Avoid blank hammering

Operating the tool horizontally may cause sudden ejection of the pile.
Excessive blank hammering is considered tool abuse and may cause tool damages.

【FAILURE TO OBSERVE THESE WARNINGS】

COULD damage the tool.



WARNING

Pay special attention to high pressure gas.

- (1) High pressure gas is contained inside the accumulator of the post driver.
- (2) Do not loosen the nut unless it is necessary for maintenance.

【FAILURE TO OBSERVE THESE WARNINGS】

COULD result in serious personal injury.



CAUTION

1. DO NOT touch the tool with your bare hands.

- (1) When operating and after operating, oil temperature will increase and the tool will be hot. DO NOT touch with your bare hands or let your skin touch the tool.
- (2) The temperature of tool will also raise while or after operating. BE SURE that you always wear protective items when using the tool.

【FAILURE TO OBSERVE THESE WARNINGS】

Could cause serious burns.

APPLICATION

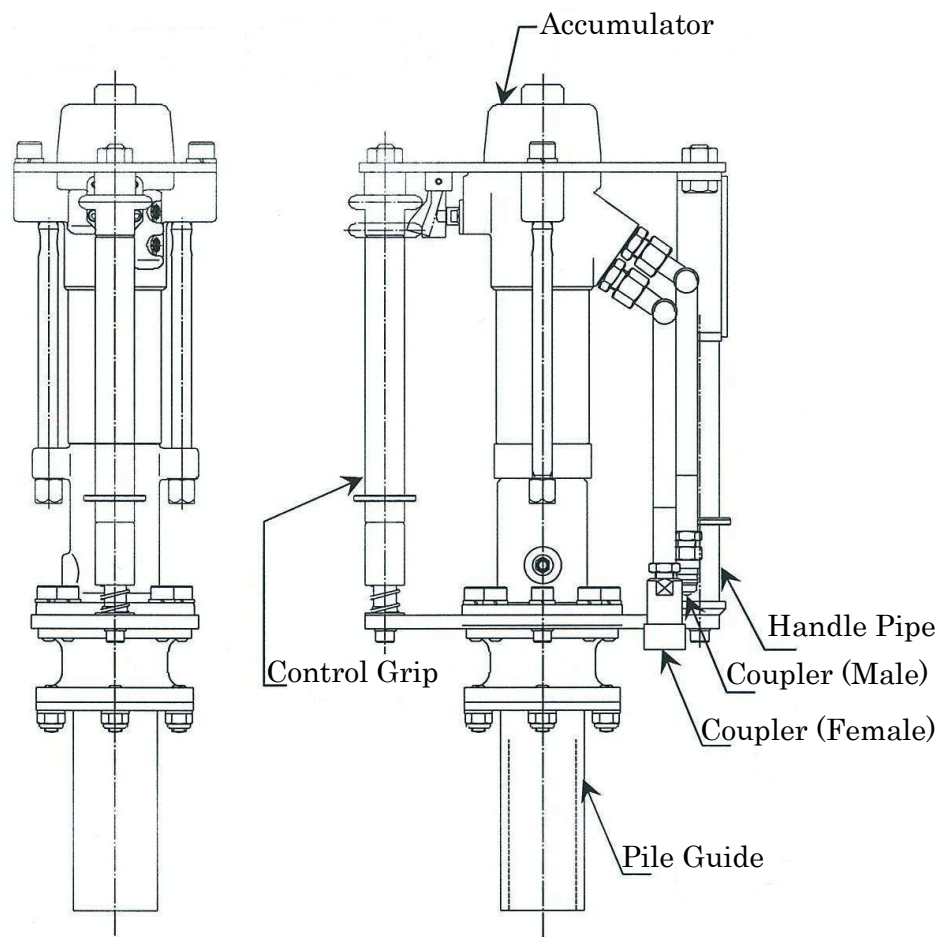
1. This hydraulic post driver is designed to be used for driving piles and other applications into soil ground.
2. **DO NOT** operate this post driver breaker on the following situations:
 - (1) Submerging part of the post driver or entire post driver into water or seawater.
 - (2) Connect with power source which oil flow and pressure exceeds the range prescribed.
 - (3) Operating at oil temperature below 10°C or over 90°C.
 - (4) Attaching to other construction machinery.
 - (5) Use the post driver for the purposes other than stated in this manual.

If using this post driver in other conditions except above, always consult with Maruzen or Maruzen authorized dealer.

SPECIFICATIONS & DESCRIPTIONS

MODEL KH192

Weight	20 kg
Dimensions	598 x 273 x 146 mm
Working pressure	8 – 11 MPa
Max. pressure	20.6 MPa
Oil flow	20.5 l/min
Blow per minute	1920
Pile dia	φ 50mm
Coupling	3/8" couplers
Back pressure	2.5 MPa
Extension hose	3/8" x 10 m (with power unit)
Hydraulic oil	ISO VG32, VG40, or equivalent
Noise	dB(A)
Vibration	m/s ²



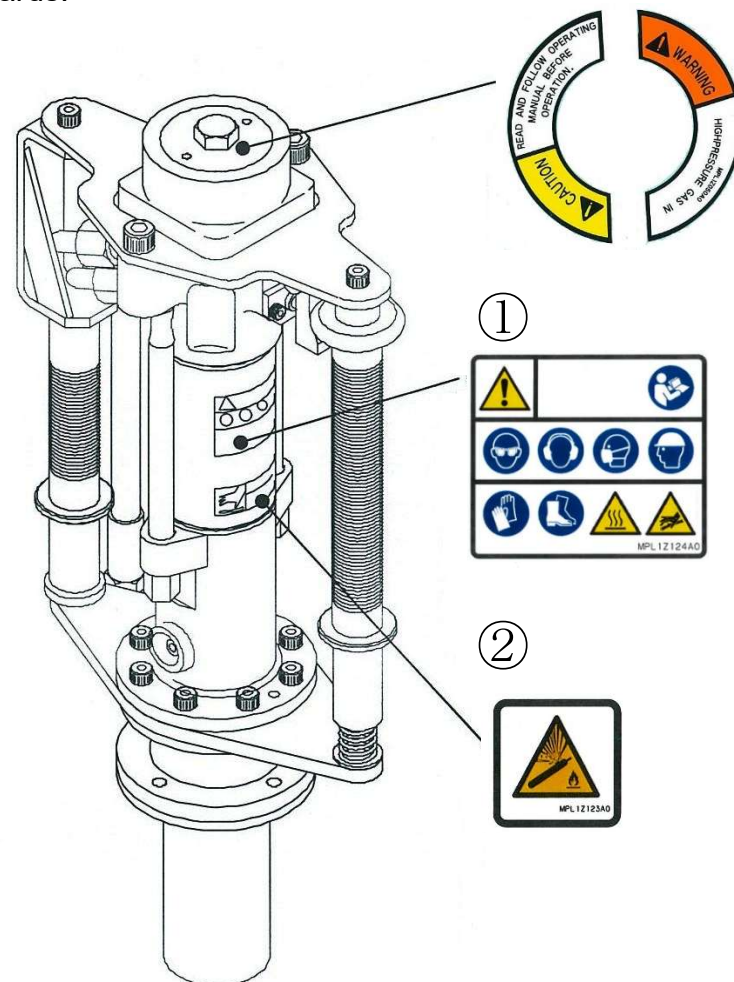
SAFETY LABELS

Precaution labels warn you to pay extra attention for potential hazards.

Ensure all decals are legible.

Replace to new one when needed

	Part No.	Part Name
①	MPL1Z124A	Label DK
②	MPL1Z123A	Label DJ

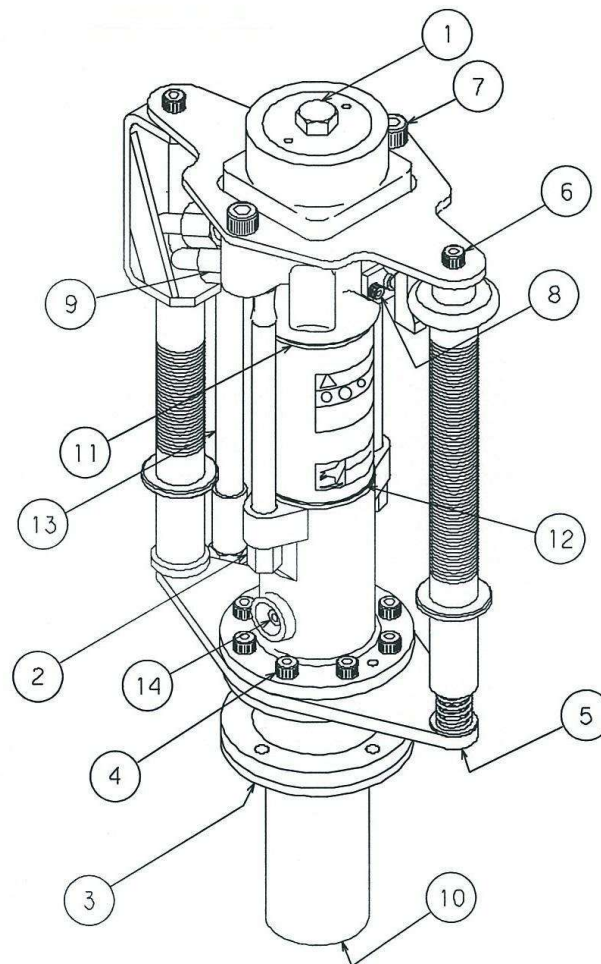


INSPECTIONS BEFORE EACH OPERATION

For the purpose of keeping the post driver in good condition, make sure the following items should be inspected each time before using. (Refer the drawing below)

Inspection Items	Countermeasures
1. Loose nuts①②③	Tighten the loosen nuts
2. Loose of bolts④⑤⑦⑧	Tighten the loosen bolts
3. Loose of hose fittings⑨	Tighten the hose fittings
4. Oil leakage from pile guide⑩	Contact Maruzen dealer for repair or maintenance.
5. Oil leakage⑪⑫	Contact Maruzen dealer for repair or maintenance.
6. Damage of hoses⑬	Replace new ones
7. Insufficient of lubrication⑭	Lubricate if necessary.

***For detailed procedure, ask Maruzen dealer.**

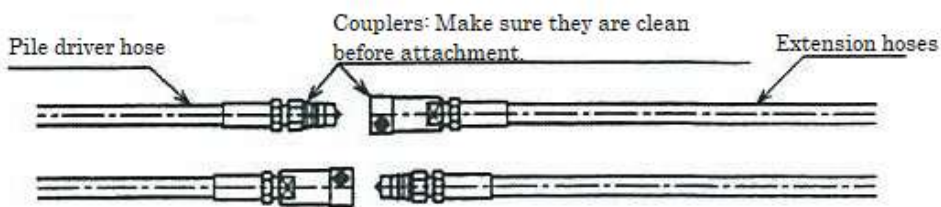


OPERATION

When connecting this pie driver to power source other than Maruzen UH070 power unit, make sure the power source you intend to use is within the range (oil flow, pressure etc.) prescribed on page 10.

1. Before Start

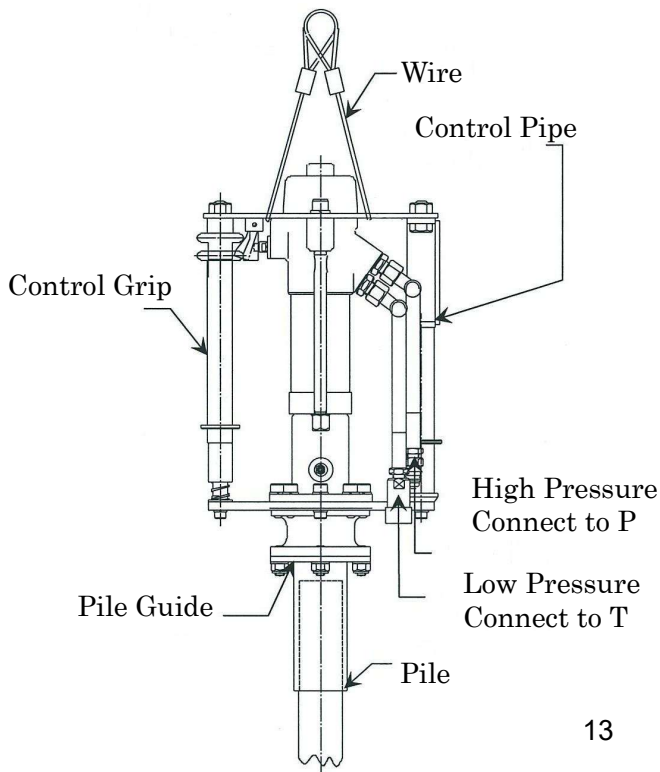
- (1) Connect the post driver with hydraulic power source.
- (2) Make sure there is no dust or dirt inside couplers before connecting post driver to hydraulic power pack.



- (3) Use ϕ 4mm wire to lift the post driver.(Refer to the below.)
- (4) Place pile vertically on the point which you intended to drive in. Set the post driver on the top of the pile.

Be careful not to let the post driver falls.

- (5) Turn on the power source. (Start the engine on the power pack)
Let it runs for a while to warm up the engine.



2. Operation

- (1) Grip the control grip and handle pipe. Press the post driver downward.
Start the post driver by clasping the control grip downward.
- (2) Make sure that pile stays vertically without inclination.
- (3) While pile has been driven into the desired depth, stop the post driver.
- (4) Remove the post driver from the pile.
- (5) Stop the power source and disconnect the hoses.

GUIDELINE

While using power source other than Maruzen power units, ask Maruzen or your dealers before the operation.

1. Always use Maruzen genuine tools. Using other than Maruzen genuine tools may cause damage of the tool and personal injury.
2. Make sure the power source is OFF when connecting the tool to the power source.
3. DO NOT operate the tool unless thoroughly trained or under the supervision of an instructor. Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool. Keep out of the reach of children.
4. DO NOT modify the tool. Modifications can reduce the effectiveness of safety measures and increase the risks to the operator.
5. Do not discard the safety instructions; give them to the operator.
6. Do not use the tool if it has been damaged.
7. Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.
8. For multiple hazards, read and understand the safety instructions

before setting, operating, repairing, maintaining, changing accessories on, or working near the post driver. Use of the tool can expose the operator's hands to hazards, including cuts, abrasions and heat.

9. Make sure if there is no object underground. If there is, remove it or change the driving point.
10. Pay attention to the followings while operating the tool.
 - (1) Be careful for not being injured by the pile.
 - (2) Be careful for not being tripped or fallen by the extension hoses.
 - (3) Make sure there are no obstacles at jobsite. Clear the work area of objects which might cause operator to trip or fall. Be careful for not being tripped by obstacles while operating.
 - (4) Be careful not to fall over when changing position of driving.
 - (5) Make sure the post driver is set horizontally. Be careful for dropping post driver after the operation.
 - (6) Be careful for getting injure your back while lifting the tool.

- (7) When the pile does not be driven into soil for 1 minute, it might be some object in the soil. If keep driving, the post driver, pile or both of them could be damaged. Remove the object or change the place.
11. Connect male and female couplers on the same extension hoses together after disconnecting from power source and the breaker.
12. When the breaker does not stop after releasing the control lever. STOP the power source IMMEDIATELY.
Or if post driver stops suddenly, release the control lever.

You MUST bring the post driver to Maruzen dealers for repairing and inspection.
13. In case of sudden breakage of hydraulic hose occurs and oil blow out the hoses, STOP the power source IMMEDIATELY.
14. When disconnecting couplers, a small amount of oil may drip down. Make sure that surrounding area does not get dirty by oil.
15. When connecting and disconnecting couplers, make sure dirt, dust and other foreign material does not enter or stick to couplers and hoses.
16. If the oil temperature is below 10°C, warm up the power source by running it for a while before start operating.
17. DO NOT assemble this pie driver into any other construction machinery.
18. DO NOT submerging part of the breaker or entire breaker into water or sea water.
19. Tools shall be inspected periodically to verify that the ratings and markings required by this part of ISO 11148 are legibly marked on the tool. The employer/user shall contact the manufacturer to obtain replacement marking labels when necessary.
20. Be aware that the failure of the workpiece, or accessories, or even of the inserted tool itself can generate high-velocity projectiles.
21. Ensure that the workpiece is securely fixed.
22. Appropriate controls to reduce the risk may include actions such as damping materials to prevent workpieces from "ringing".
23. If the operator experiences symptoms, such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warning signs should not be ignored. The operator should tell the employer and consult a qualified health professional.
24. If you experience numbness, tingling, pain or whitening of the skin in your fingers or hands, stop using the pie driver, tell your employer and consult a physician.
- 25.

26. DO NOT use damaged hydraulic hoses or worn hydraulic hoses. It may cause burst of the hose when using damaged or worn hydraulic hose.
27. Make sure the followings have been done before storing the post driver for a long term.
 - (1) Wipe entire body of the post driver with wet cloth with hydraulic oil.
 - (2) Put a cover on the post driver and store at the dry place.
28. Proceed with care in unfamiliar surroundings. There can be hidden hazards, such as electricity or other utility lines.
29. Ensure that there are no electrical cables, gas pipes, etc., that can cause a hazard if damaged by use of the tool.
30. Use only clean oil.
31. Ensure that couplings are clean and correctly engaged before operation.
32. Do not install or remove the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
33. Be sure all hoses connections are tight.
34. Wipe all couplers clean before connecting. Failure to do so can result in damage to the quick couplers and cause overheating.

DUST AND FUMES

1. Dust and fumes generated when using the post driver can cause ill health (for example, cancer, birth defects, asthma and/or dermatitis); risk assessment and implementation of appropriate controls for these hazards are essential.
2. Risk assessment should include the dust created by the use of the tool and the potential for disturbing existing dust
3. Operate and maintain the post driver as recommended in these instructions, to minimize dust and fume emissions.
4. Where dust or fumes are created, the priority shall be to control them at the point of emission.
5. All integral features or accessories for the collection, extraction or suppression of airborne dust and fumes should be correctly used and maintained in accordance with the manufacturer's instructions.
6. Select, maintain and replace the consumable/inserted tool as recommended in the instructions handbook to prevent an unnecessary increase in dust or fumes.

PROTECTION EQUIPMENT

1. Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.
2. Use respiratory protection in accordance with employer's instructions and as required by occupational health and safety regulations.
3. Wear warm clothing when working in cold conditions and keep your hands warm and dry.
4. Always wear impact-resistant eye protection during the operation of the breaker. The grade of protection required should be assessed for each use.
5. Wear suitable gloves to protect hands.

SOUND

1. Exposure to high noise levels can cause permanent, disabling hearing loss and other problems, such as tinnitus (ringing, buzzing, whistling or humming in the ears). Therefore, a risk assessment and implementation of appropriate controls for these hazards are essential.
2. Operate and maintain the post driver as recommended in the instruction handbook, to prevent an unnecessary increase in the noise level.

3. Select, maintain and replace the consumable/inserted tool as recommended in the instruction handbook, to prevent an unnecessary increase in noise.

VIBRATION

1. Exposure to vibration can cause disabling damage to the nerves and blood supply of the hands and arms.
2. Operate and maintain the post driver as recommended in the instruction handbook, to prevent an unnecessary increase in vibration levels.
3. Do not allow the inserted tool to chatter on the workpiece, as this is likely to cause a substantial increase in vibration.
4. Select, maintain and replace the consumable/inserted tool as recommended in the instructions handbook to prevent an unnecessary increase in vibration levels.
5. Hold the tool with a light but safe grip, taking account of the required hand-reaction forces, because the risk from vibration is generally greater when the grip force is higher.

MAINTENANCE

1. DAILY INSPECTION

Check before each operation

Do not inspect or clean the tool while the hydraulic power source is connected.

Accidental engagement of the tool can cause serious injury.

1. Check if there is any oil leakage from hoses or breaker itself.
2. Check if there are any cracks or damage in tools.
3. Check all items on P.12.

2. PERIODICAL INSPECTION

Ask your dealer for the periodical inspections.

Inspection Items	Operating Hours
Nitrogen gas charge in accumulator	300 hours or 1 Year
Replacement of accumulator diaphragm	500 hours or 2 years
Replacement of Valve body O ring	500 hours or 2 years
Replacement of U-cup packing	500 hours or 2 years
Replacement of each O Ring	Every 3 years
Grease	Every 50 hours or 6 months

*Pressure of nitrogen gas charging into accumulator is 4MPa.

TOOL DISPOSAL

To dispose of the machinery, shall be performed in accordance with the national, or local laws, ordinances, rules, and standards.

TROUBLESHOOTING



NOTE : Ask Maruzen or authorized Maruzen service center for maintenance of * mark

PROBLEM	PROBABLE CAUSE	COUNTERMEASURE
Grip the control lever but does not start	1. Power source is OFF.	Turn on the hydraulic power source.
	2. Hoses are not connected.	Connect hoses.
	3. Couplers connection are incorrect.	Connect the couplers correctly and lock them.
	4. Relief valve pressure is set too low	Adjust pressure to 120~140kgf/cm ² (11.8~13.7MPa) *
	5. Damage of control grip.	Replace a new control lever*
	6. Control valve is not functioning.	Disassemble post driver, clean and remove dirt and dust between control lever and valve body*
	7. Outlet side and oil return side was connected inversely.	High pressure hoses are connected to the upper side of the post driver.
	8. Wear of the control grip.	Replace new control grip.
Functioning but weak hammering or low hammering speed	1. Low rate of oil flow from power source	Turn the engine rotation rate up and increase the rate of oil flow (Adjust oil flow to the necessary rate)
	2. Pressure in relief valve in power source is set too low	Adjust pressure to the range of 120-140kgf/cm (11.8-13.7MPa)
	3. Control valve does not function properly	Remove and clean the joint of control valve and valve body.

TROUBLESHOOTING

★ **NOTE :** Ask Maruzen or authorized Maruzen service center for maintenance of * mark

PROBLEM	PROBABLE CAUSE	COUNTERMEASURE
	4. Back pressure is too high.	Inspect return side hose.
Normal speed, but weak hammering	1. Low accumulator gas pressure	Nitrogen gas charge. Charge pressure 40kgf/cm ² (3.9MPa) *
	2. Damage of accumulator diaphragm	Replace diaphragm *
Strong hammering and in high speed	1. High rate of oil flow	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 are not connected	Check each connected part
	2. Damage of control valve	Replace a control valve *
Oil leakage from control lever	1. Damage, wear or harden of O ring	Replace O ring *
Profuse Oil leakage from front end	1. Damage of U cup packing	Replace U cup packing *
	2. Damage of U cup packing due to the scratch of piston rod.	Replace U cup packing, remove the scratch on piston rod *
High pressure hose shakes intensely	1. Damage of accumulator diaphragm	Replace diaphragm

TROUBLESHOOTING

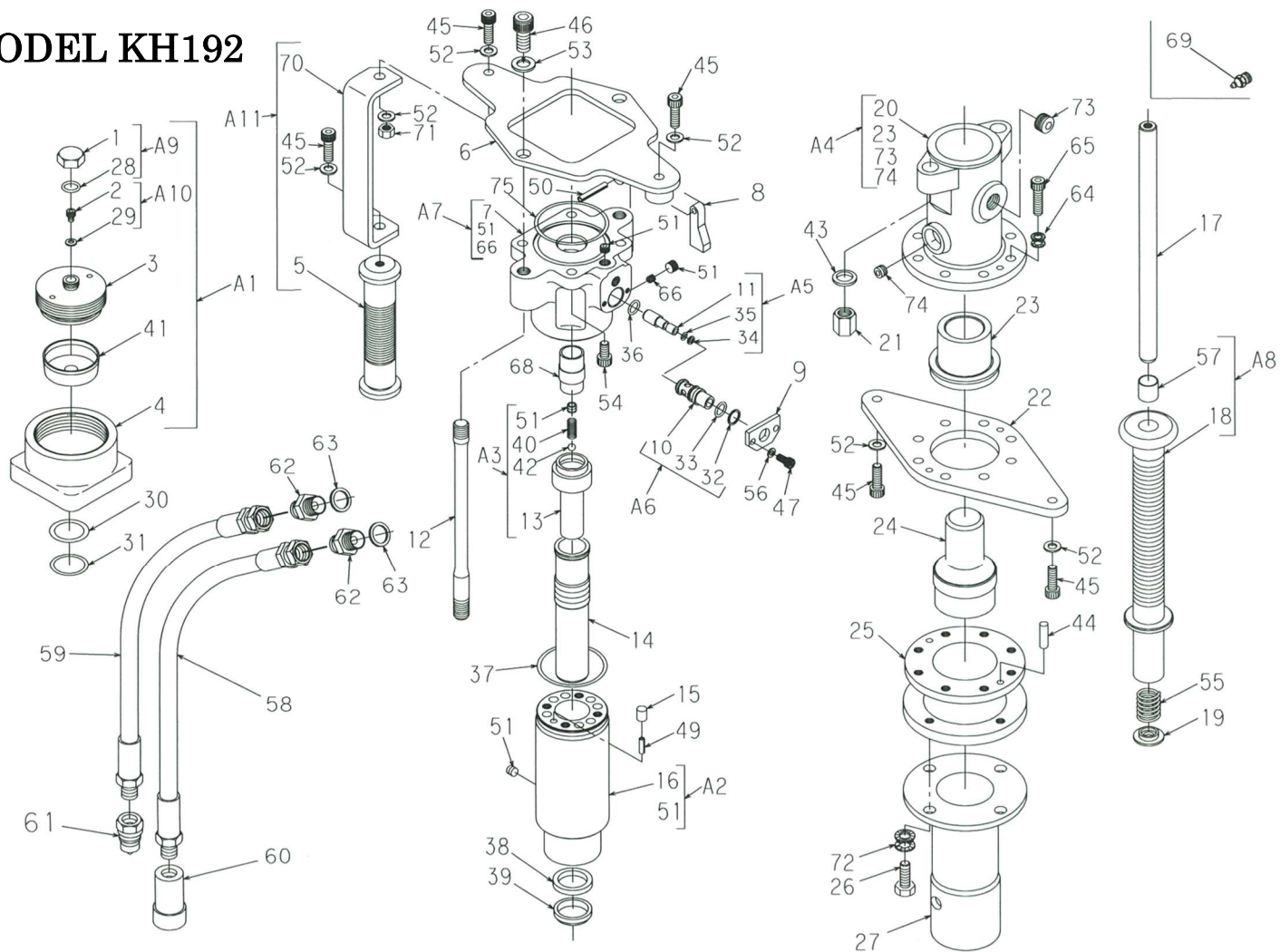


NOTE : Ask Maruzen or authorized Maruzen service center for maintenance of * mark

PROBLEM	PROBABLE CAUSE	COUNTERMEASURE
Replace the control valve, but the post driver does not stop	1. Foreign substance is caught in the valve rod.	Disassemble, clean and adjust

EXPLODED VIEW (I)

MODEL KH192



PARTS LIST

MODEL KH192

No.	Part No.	Part Name	Q'ty	No.	Part No.	Part Name	Q'ty
1	M2LTE115A	Cap	1	23	MB26Z014A	Chisel bush	1
2	1120-413-A	Cap bolt	1	24	MB26Z008A	Anvil	1
*3	M2LTE109A	Lid(S)	1	25	MB26Y009A	Anvil holder	1
*4	M2LTD103A	Shell	1	26	B-10x20(11T)	Bolt	4
5	MB26Y022A	Handle pipe	1	27	MB26Z020A	Post cover	1
6	MB26Y005A	Top plate	1	28	OS-22.4	O-ring	1
7	MB26X012A	Valve body	1	29	WS06(((((((BH	Seal washer	1
8	MB08Z015A	Cam	1	30	OBP-22	Back up ring	1
9	MB26Z010A	Plate	1	31	OP-22	O-ring	1
10	M2LTE108A	Valve guide	1	32	OBP-14	Back up ring	1
11	M1KTE111A	Valve rod	1	33	OP-14	O-ring	1
12	MB26Z001B	Draw bolt	2	34	OBP-5	Back up ring	1
13	M2LTE124A	Inner tube	1	35	OP-5	O-ring	1
14	M2LTD125A	Piston (B)	1	36	OP-12.5(1B)	O-ring	1
15	MB26Z018A	Collar	1	37	OG-60	O-ring	1
16	M2LTD104B	Cylinder	1	38	IUIS-30-40-6	U-cup packing	1
17	MB26Z004A	Handle shaft	1	39	DS-30385	Dust seal	1
18	MB26Z003A	Handle grip	1	40	M1HTE107A	Spring(P)	1
19	MB26Z006A	Spring stay	1	41	MB02E006A	Diaphragm	1
20	MB26Y016B	Front cap	1	42	QB-5/16	Steel ball	1
21	1120-423	Nut	2	43	WF-14-2L (JIS B1252)	Spring washer	2
22	MB26Y007A	Flange	1	44	PFB-6x18 (YAKIIRE)	Pin	2

PARTS LIST

MODEL KH192

No.	Part No.	Part Name	Q'ty	No.	Part No.	Part Name	Q'ty
45	BH-8x25	Bolt	4	65	BH-8x30	Bolt	1
46	BH-12x25	Bolt	2	66	M2LTE118A	M6 Orifice plug (ϕ 2.2)	1
*47	BH-5x12	Bolt	2	67			
48			4	68	M1XTE108A	Control Valve	1
49	PR-6x16	Pin	1	69	GN-01 (accessory)	Grease Nipple	1
50	PR-5x30	Pin	1	70	MB26Z023A	Stay	1
*51	BPH1-PT1/8	Plug	11	71	N1-8	Nut	1
52	WS-8	Washer	8	72	NL10DP	Nord Lock Washer	4
53	WS-12	Washer	2	73	BPH1-PT3/8	Plug	1
54	BH-8x15	Bolt	4	74	BPH1-PT1/8	Plug	1
*55	SAWANE-5549	Spring	1	75	OS-70	O-ring	1
56	WS-5	Washer	2				
57	DB-MB1615DU	DU bush	1				
58	21091-6-50	Low pressure hose	1				
59	21091-6-45	High pressure hose	1				
60		Coupler	1				
61		Coupler	1				
62	N1011-06-HEX22	Adaptor	2				
63	CU-18	Washer	2				
64	WF-8-1L	Washer	8				

Assy supplied Parts

MODEL KH192

NO.	PARTS NUMBER	DESCRIPTION	Q'TY	COMPONENTS NO.
A1	M2LTZ501A	Accumulator Assy	1	1,2,3,4,28,29,30,31,41
A2	M2LTZ502A	Cylinder Assy	1	16,51
A3	M2LTZ503A	Inner tube Assy	1	13,40,42,51
A4	MB26Z026B	Front cap Assy	1	20,23,51
A5	M1XTZ505A	Valve rod Assy	1	11,34,35
A6	M2LTZ506A	Valve guide Assy	1	10,32,33,36
A7	MB26Z029A	Valve body Assy	1	7,51
A8	MB26Z030A	Handle grip Assy	1	18,57
A9	M2LTZ508A	Cap nut Assy	1	1,66
A10	MB24Z509A	Cap bolt Assy	1	2,29
A11	MB26Z031A	Handle pipe Assy	1	5,45,52,70
A12	MB36Z501A	Seal Kit	1	28,29,30,31,32,33,34,35,36,37,38,39,63(2),75