

The logo for HIRD, featuring the word "HIRD" in bold yellow capital letters centered within a blue square. The square is framed by two white curved lines, one above and one below the text.

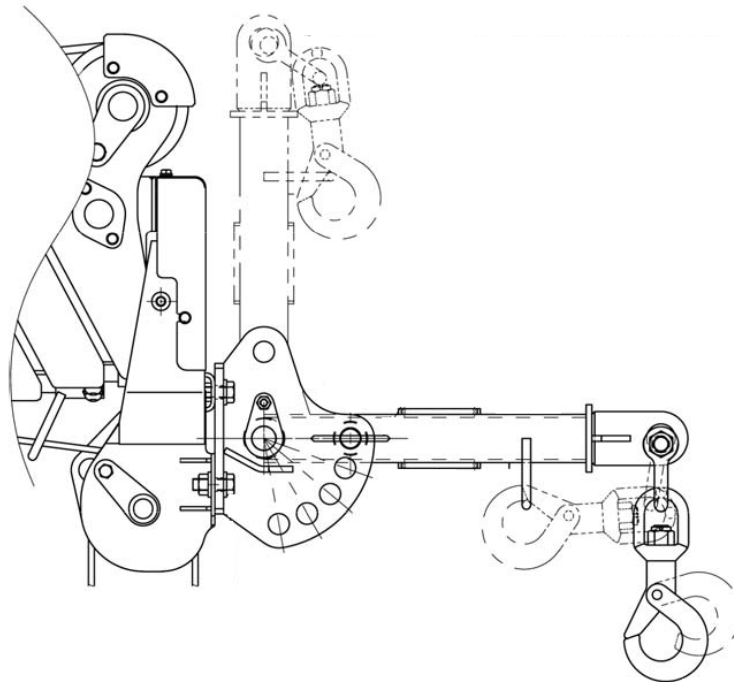
HIRD

www.hird.co.uk

OPERATOR MANUAL

MAEDA MC174

300KG - SEARCHER HOOK



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1. INTRODUCTION

Thank you for purchasing the “Searcher Hook” for MAEDA Mini Crawler Crane model MC-174C.

This manual is intended as a guide for the safe and effective use of this machine.

This manual describes the procedures for proper operation and maintenance of the machine.

Warnings and precautions defined in this manual shall be observed for safety.

Many of the accidents are caused by the operation, inspection, or maintenance that does not observe the basic precautions.

Be sure to read this manual and understand the procedures for machine operation, inspection, and maintenance thoroughly before performing operation of this machine.

Failure to observe the basic precautions defined in this manual may lead to hazardous accidents.

WARNING

Failure to use this machine properly can lead to serious personal injury or death. Operators and maintenance personnel must always read this manual prior to operation or maintenance of this machine.

Save this manual at a designated place for reference when necessary. All personnel who work on this machine are to carry out periodic reference.

- **Only those who have thorough understanding of the fundamental procedures provided in this manual are qualified to perform machine operation.**
- **Keep this manual handy for reference when necessary.**
- **Should you lose or damage this manual, contact Maeda or our sales service agency immediately for ordering a new manual.**
- **This manual should always accompany this machine upon transfer of the machine to the next owner.**
- **This manual has adopted data that was available at the time of the creation of the manual.**

The contents of this manual, including maintenance specifications, tightening torque, pressure, measuring method, adjustment value, and illustrations, are subject to change upon unremitting refinement of the machine, without notice.

Machine maintenance may be susceptible to revisions. Always obtain the latest information from Maeda or our sales service agency before performing maintenance of this machine.

For safety instructions, see “2. For Safe Use of Machine” on page 2.

2. FOR SAFE USE OF MACHINE

This manual classifies the risks into the following three categories to present the details of the safety labels in easy-to-understand manner.



This denotes that there is an imminent hazard which will cause serious personal injury or death.
The method of hazard circumvention is stated.



This denotes that there is a hazard which can cause serious personal injury or death.
The method of hazard circumvention is stated.



This denotes that there is a potential hazard which may cause minor or moderate personal injury or serious damage to this machine.
The method of hazard circumvention is stated.

This manual also provides the following to indicate what must be observed for the sake of the machine and what will be of help.



This denotes that failure to handle the machine properly may damage the machine or shorten its life.



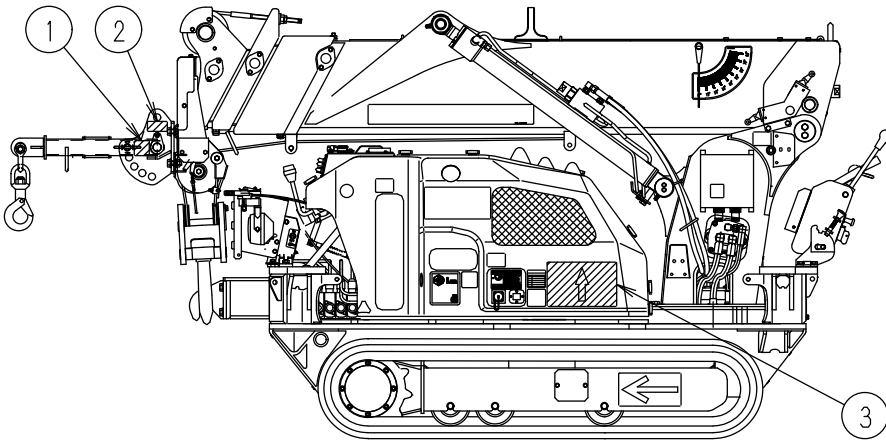
This denotes helpful information.

Not only procedures for operation, inspection, and maintenance of this machine described in this manual but also safety precautions should pertain to the case where this machine is only used for specified tasks. Every circumstance incidental to use of this machine is unforeseeable, and therefore, cautions given in this manual and on this machine do not necessarily cover every safety-related issue.

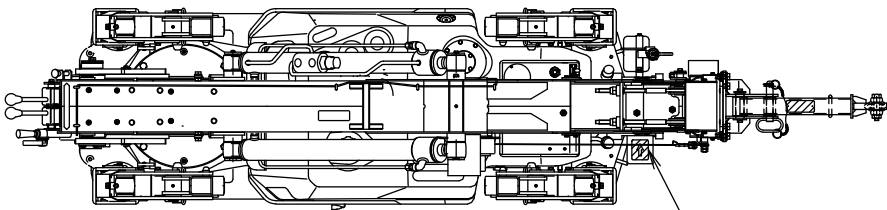
Necessary safety actions should be taken under your responsibility if operation, inspection, and maintenance in a situation that is not described in this manual are performed.

Even in the above case, never attempt work and operations that this manual prohibits you to do.

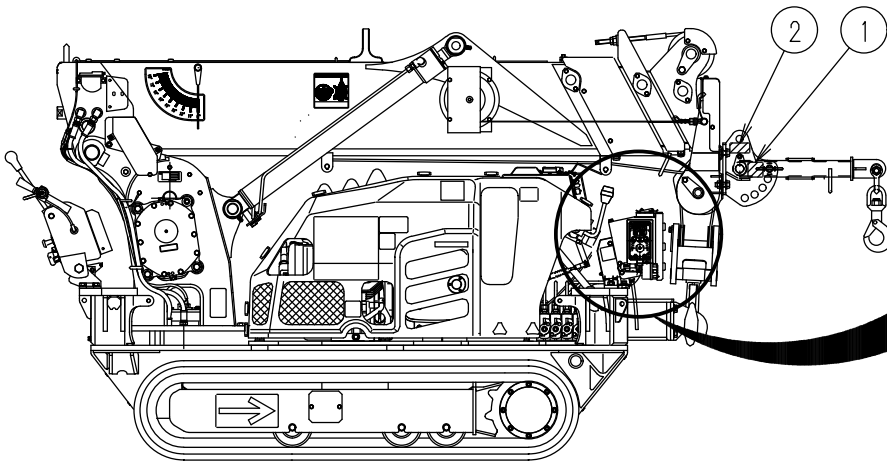
3. Safety Decal Locations



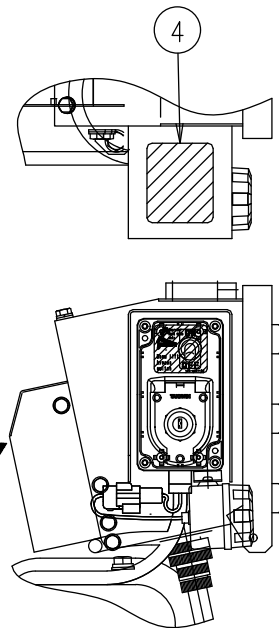
Left Side View



Top View



Right Side View



⚠ WARNING

SEVER HAZARD

Keep fingers clear of pin hole.

102-4608500

① 102-4608500

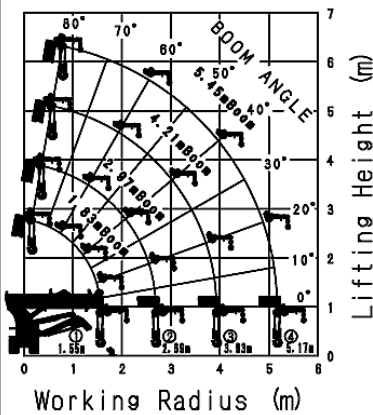
⚠ DANGER

Searcher hook fix bolt must be tightened with tightening torque at **93 Nm** to avoid Searcher hook to fall off.

101-4608700

② 101-4608700

Working Range Chart For Searcher Hook



MC-174C Rated Total Load For Searcher Hook

Rated Total Load Chart with outrigger extended to maximum				Rated Total Load Chart with outrigger extended to other than maximum											
1.830m boom		2.965m boom		4.205m boom		5.445m boom		1.830m boom		2.965m boom		4.205m boom		5.445m boom	
Working Radius (m)	Rated Total Load (ka)	Working Radius (m)	Rated Total Load (ka)	Working Radius (m)	Rated Total Load (ka)	Working Radius (m)	Rated Total Load (ka)	Working Radius (m)	Rated Total Load (ka)	Working Radius (m)	Rated Total Load (ka)	Working Radius (m)	Rated Total Load (ka)	Working Radius (m)	Rated Total Load (ka)
Less than 1.0	300	Less than 1.0	300	Less than 1.3	300	Less than 1.7	300	Less than 1.0	300	Less than 1.0	300	Less than 1.3	300	Less than 1.7	300
1.3	300	1.3	300	1.5	300	2.0	300	1.3	300	1.3	300	1.5	300	2.0	300
1.55	300	1.5	300	2.0	300	2.5	300	1.55	300	1.5	300	2.0	300	2.5	300
		2.0	300	2.5	300	2.8	300			2.0	300	2.5	300	2.8	250
		2.5	300	3.0	300	3.0	300			2.5	300	3.0	250	3.0	250
		2.69	300	3.5	300	3.5	300			2.69	300	3.5	150	3.5	150
				3.93	300	4.0	250					3.93	100	4.0	100
						4.5	200							4.5	50
						5.17	150							5.17	50

⚠ DANGER

- When using the searcher hook, be sure to set searcher hook mode for moment limiter.
- Must not use the searcher hook and the crane hook simultaneously.

101-3327300

③ 101-3327300

⚠ DANGER

TIPPING HAZARD

The boom lift bypass switch to be used only when in searcher hook mode.

The boom lift function is stopped automatically when overloaded.

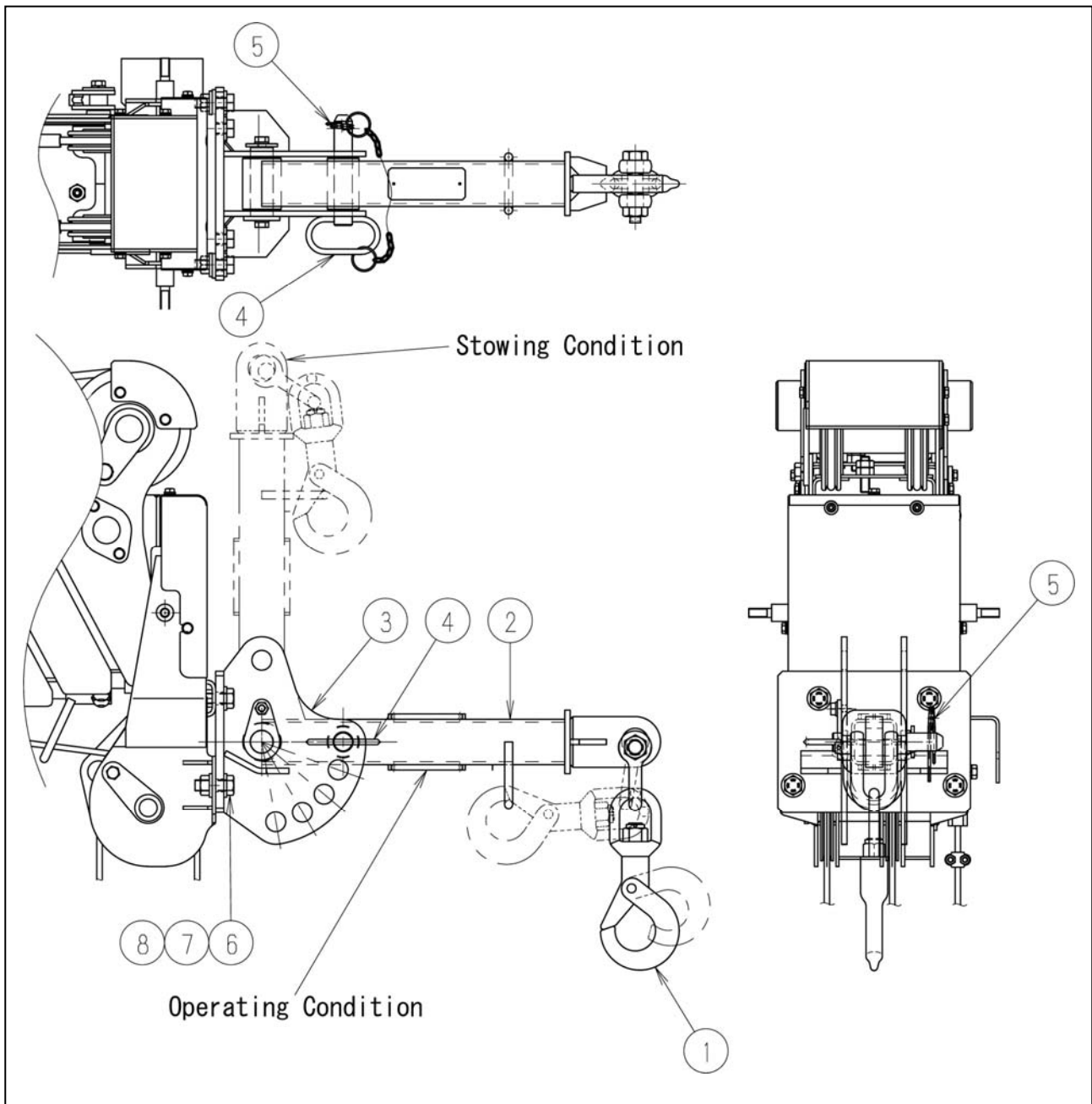
Use this switch to enable the boom lift function for safety.

This switch is for emergency use only, never use this for normal lifting of loads clear of ground.

101-4609300

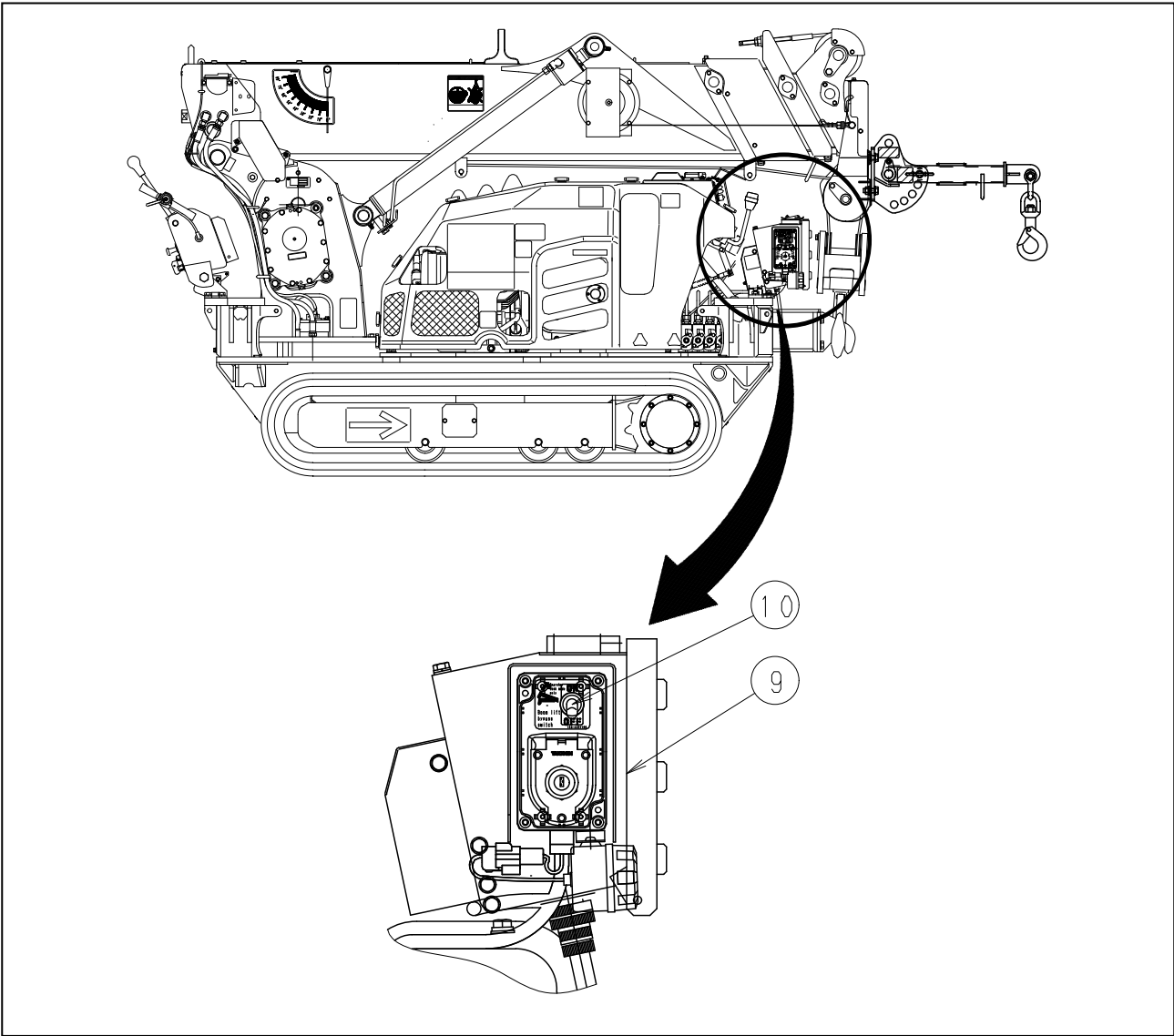
④ 101-4609300

4. Searcher Hook Each Section



- (1) Hook
- (2) E-Boom
- (3) Bracket
- (4) Position pin

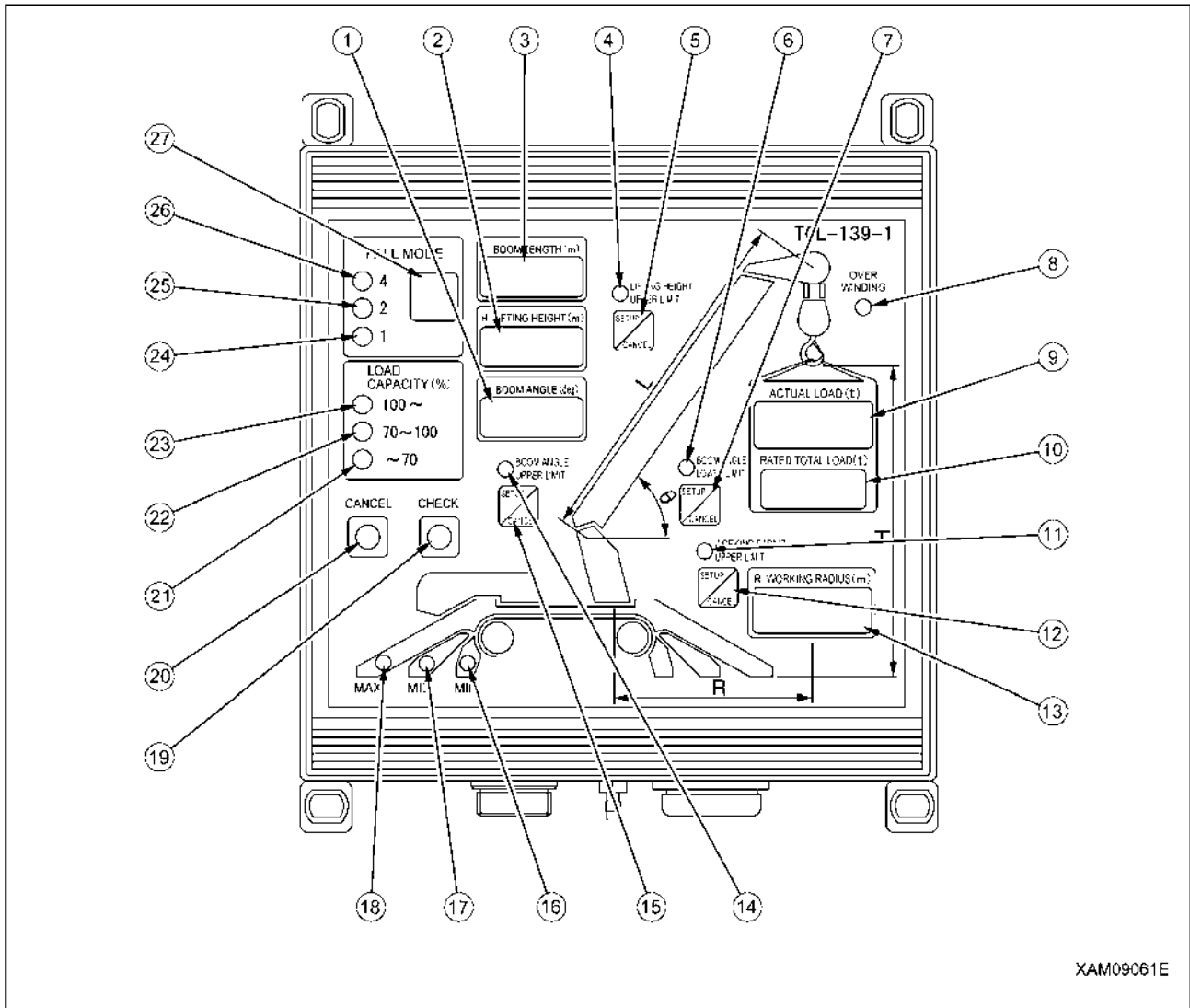
- (5) Snap pin
- (6) Hex. head bolt
- (7) High tension washer
- (8) Hex. head nut



(9) Moment limiter Display unit

(10) Boom lift bypass switch

5. NAMES OF MOMENT LIMITER DISPLAY UNIT



XAM09061E

- | | |
|---|--|
| (1) Boom angle display | (15) Boom angle upper limit switch |
| (2) Lifting height display | (16) Outrigger MIN. extension LED (Orange) |
| (3) Boom length display | (17) Outrigger MID. extension LED (Orange) |
| (4) Boom lifting height upper limit LED (Red) | ★Not in use MC-174C. |
| (5) Boom lifting height upper limit switch | (18) Outrigger MAX. extension LED (Orange) |
| (6) Boom angle lower limit LED (Red) | (19) Check switch |
| (7) Boom angle lower limit switch | (20) Cancel switch |
| (8) Over hoist detection LED (Red) | (21) Load capacity less than 70% LED (Orange) |
| (9) Actual load display | (22) Load capacity 70 to less than 100% LED (Orange) |
| (10) Rated total load display | (23) Load capacity 100% or more LED (Orange) |
| (11) Working radius upper limit LED (Red) | (24) 1-fall LED (Orange) |
| (12) Working radius upper limit switch | (25) 2-fall LED (Orange) |
| (13) Working radius display | (26) 4-fall LED (Orange) |
| (14) Boom angle upper limit LED (Red) | (27) Fall mode selector switch |

For general operation, see "Moment Limiter (Overload Detector) in the MC-174C Operation Manual page 3-16".

[1] DESCRIPTIONS OF SWITCHES ON MOMENT LIMITER DISPLAY UNIT

CAUTION

Refer “Moment Limiter (Overload Detector) in the MC-174C Operation Manual page 3-16” section for switches other than the “WIRE FALLS SELECTOR SWITCH AND WIRE AND WIRE FALLS DISPLAY LED” shown in the next section.

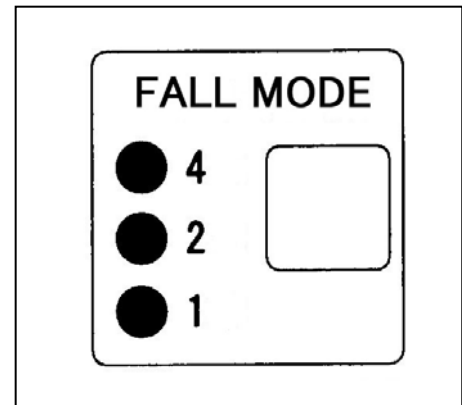
1. WIRE FALLS SELECTOR SWITCH AND WIRE FALLS DISPLAY LED (BLUE)

⚠ DANGER

Fall mode must be set as “Searcher hook mode” when operating searcher hook. Using searcher hook other than in “Searcher hook mode” may prevent issuance of the pre-warnings and boom auto-stop even when the overload is near happening, and thus may result in crane damage or the machine tripping over and may result in a serious accident.

Use this switch to change the number of wire falls.

- Keep pressing the switch for 2 seconds or more.
The setting changes from “4-falls” to “Searcher hook mode”. At the same time, the wire falls display LED changes from “4-falls” to “Searcher hook mode (all lights ON)”, indicating that the setting has changed.
- Then each time you press the switch for 2 seconds or more, the setting of the wire falls changes from “Searcher hook mode” to “1-fall”, then “1-fall” to “2-falls”, and then “2-falls” to “4-falls”.

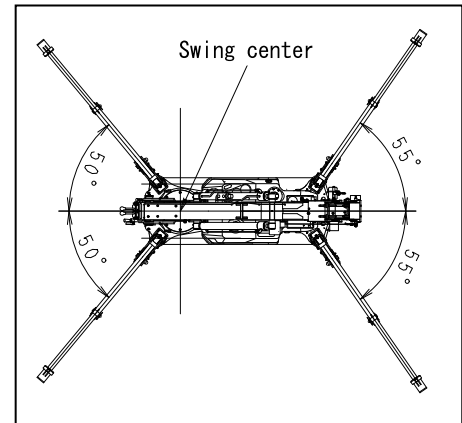


NOTES

When changing the setting right after doing so, release your hand from the switch, and then press the switch again.

6. Operation

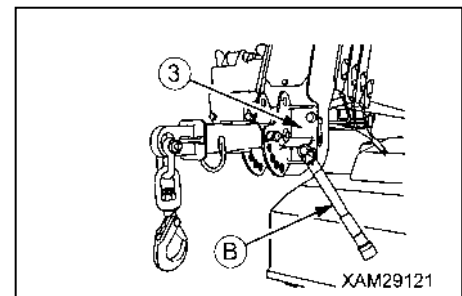
1. See "Outrigger Setting in the MC-174C Operation Manual, page 3-68" and set the outrigger.



2. Fasten searcher bracket (3) to main-boom using 4 sets of M12 bolts and nuts. Tighten the bolts with torque wrench (B) then to torque of 93Nm [± 13 Nm].

⚠ WARNING

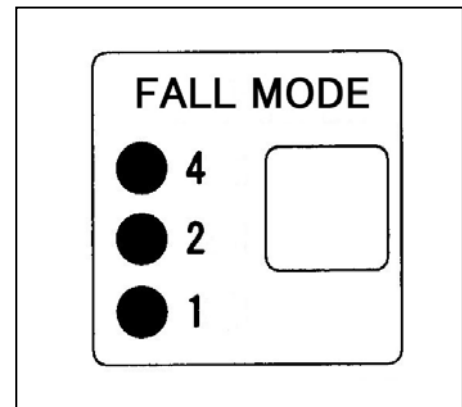
Torque Searcher Hook mounting plate bolts to 93Nm. Use new nuts, bolts and washers every time mounting plate is installed. Refer to the Operation Manual for complete details.



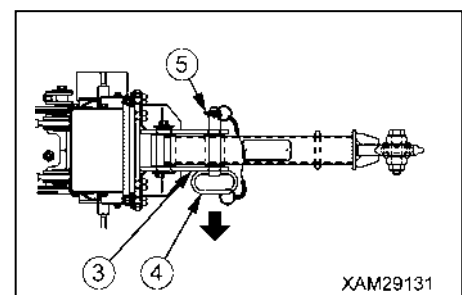
3. Shift the wire falls selector switch on moment limiter display unit to "Searcher hook mode" (all LED ON).

⚠ DANGER

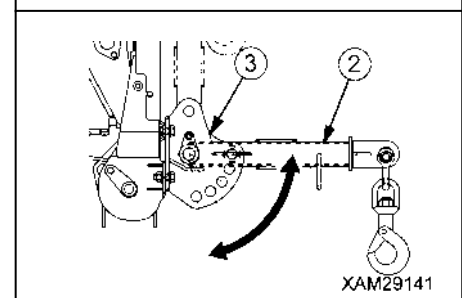
Fall mode must be set as "Searcher hook mode" when operating searcher hook. Using searcher hook other than in "Searcher hook mode" may prevent issuance of the pre-warnings and boom auto-stop even when the overload is near happening, and thus may result in crane damage or the machine tripping over and may result in a serious accident.



4. Remove the snap pin (5) from the end of position pin (4) of bracket (3), and remove the position pin (4).



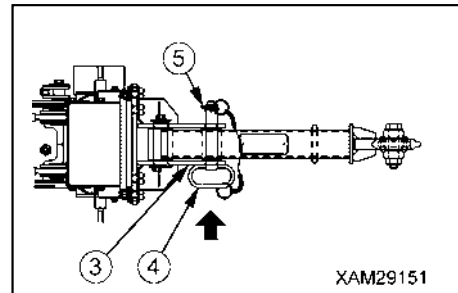
5. Move E boom (2) to the required angle for the work, and line up the holes in the E boom (2) and bracket (3).



6. Insert the position pin (4) through the hole of bracket (3), and secure it with the snap pin (5) to the tip of position pin (4).

⚠ DANGER

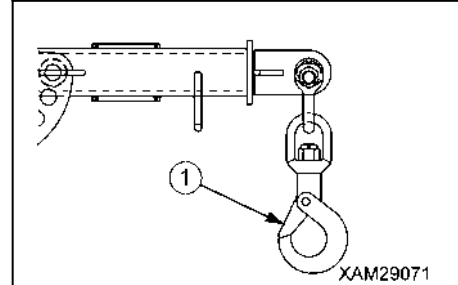
Always secure the position pin (4) with the snap pin (5). If the snap pin falls out during operations, serious injury or damage to the machine may result.



7. Attach the load securely to the hook (1) and start operations.

⚠ WARNING

Always work in accordance with all appropriate local regulations concerning your own and others' safety.



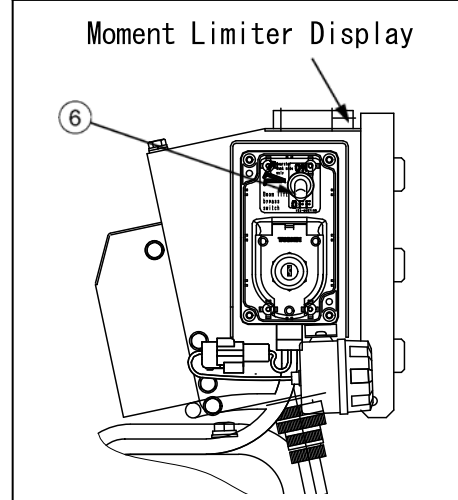
8. In case machine is automatically stopped in overload condition, boom can be lifted using the boom lift by-pass switch (6).

To operate boom lifting using this boom lift bypass switch(6),keep pressing the switch to upper side and operate boom lift at the same time.

After the work, release the switch and it automatically turns off.

⚠ DANGER

The boom lift bypass switch is to be used only when in searcher hook mode.
 The boom lift function is stopped automatically when overloaded.
 Use this switch to enable the boom lift function for safety.
 This switch is for emergency use only, never use this for normal lifting of loads clear of ground.

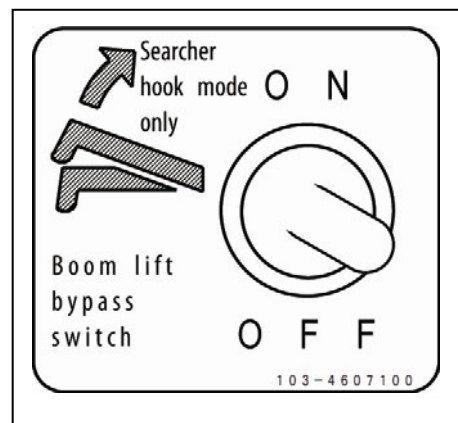


NOTES

In case machine is automatically stopped by entering overload area by boom lowering or boom extending operation, recover from the overload area by retracting boom, or lifting boom by keeping the boom lift by-pass switch to ON side.

NOTES

When working envelope is set, and operation automatically stops at the boom upper angle limit or hook height upper limit, boom can be lifted beyond the limit by using this boom lift bypass switch.
 The boom lift bypass switch is to be used only when in searcher hook mode.



7. Inspection and Maintenance

7.1 Legal Inspection

If a periodic safety inspection is required by the laws and regulations of your country, perform that inspection in addition to the inspection items listed below.

1. Verify that all safety devices are operating properly.
2. Check the hoist accessories, including the hook block, for problems or damage.
3. Check the structural parts of the machine, including the frame and boom, for cracks, deformation and damage.
4. Check for loose or missing mounting bolts and joints.
5. Verify that the boom operates properly by stopping, extending, retracting, raising, lowering and swinging the boom.

Contact Maeda or a Maeda sales service agency to request inspection and repair service as needed.

7.2 Consumables

Parts for mounting searcher hook are consumption articles. Replace it at periodic inspection or before it reaches abrasion limits. Replace consumption articles regularly, which shall produce economical use of this machine. Always replace to our genuine item. Check parts catalog for correct part number for parts request.

[CONSUMABLES LIST]

Part	Replacement cycle
Searcher hook fix bolt M12x35L (4pcs)	★ Every 6 months or when damage, crack, or squash is found
Searcher hook fix nut M12x1grade (4pcs)	★ Every 6 months or when damage, crack, or squash is found
Searcher hook fix washer M12x3.2t (high tension)(8pcs)	★ Every 6 months or when damage, crack, or squash is found

★ Items include a halt period. Contact Maeda or a Maeda sales service agency for part replacement information.

7.3 Inspection and Maintenance List

This section only covers searcher hook kit. For crane body, please refer to “Inspection and Maintenance in the MC-174C Operation Manual” and follow its precautions.

Inspection and maintenance items	Page
7.4.1 INSPECTION BEFORE OPERATION	14
[CHECKING BEFORE STARTING ENGINE]	14
[1] CHECKING BOOM AND BRACKET	14
[2] CHECKING SEARCHER HOOK FIX BOLTS	14
[3] CHECKING ELECTRICAL WIRING FOR DAMAGE	14
[CHECKING AFTER STARTING ENGINE]	15
[1] CHECKING FUNCTIONS OF BOOM	15
[2] CHECKING MOMENT LIMITER FOR OPERATION (SEARCHER HOOK MODE)	15

7.4 Maintenance Procedures

7.4.1 Inspection Before Operation

[CHECKING BEFORE STARTING ENGINE]

Check the following in this section without starting the engine and before starting the first work every day.

[1] CHECKING BOOM AND FRAME

- Check each part of the boom and frame for cracks, excessive deformation, contamination and other damage. In addition, check bolts, nuts and pins for any looseness, drop, damage and other matters. If you find any abnormality, repair.

[2] CHECKING SEARCHER HOOK FIX BOLTS

⚠ DANGER

If any damage found on searcher hook fix bolt, please exchange it to new one right away. Breakage of bolt cause searcher hook to fall off.

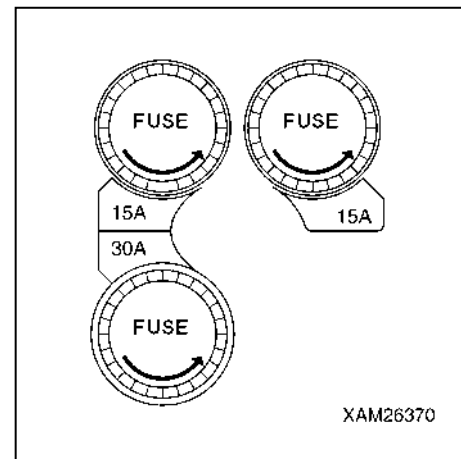
- Check if there is crack, damage, or squash on screw thread on screw part of bolt.
If crack, damage or squash on screw thread is found, change the bolt to new one even if it is earlier than expected bolt life.

[3] CHECKING ELECTRICAL WIRING (FUSE BOX) FOR DAMAGE

⚠ WARNING

If fuses are blown frequently or if you find the trace of a short circuit created in the electrical wiring, be sure to find the cause and fix the problem.

1. Turn the fuse holders on control panel counterclockwise and take tubular fuses out.
2. Check the fuse for damage and meltdown and if the fuse of the specified capacity is being used.
3. If a fuse has melted down or the trace of an open/short circuit is found in the electrical wiring, ask us or our sales service agency for repair.



[CHECKING AFTER STARTING ENGINE]

Check the following in this section after starting the engine and before starting the first work every day.

CAUTION

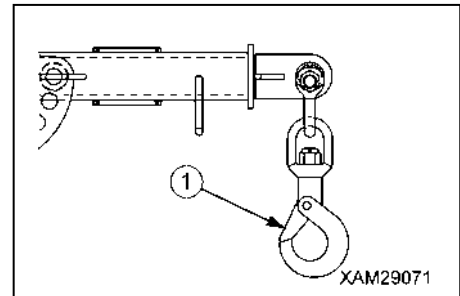
The checkups described in this section should be carried out after starting the machine. Refer to "Starting the Engine in the MC-174C Operation Manual page 3-54" and later to execute the engine startup, traveling operations, outrigger operations and crane operations.

[1] CHECKING FUNCTIONS OF BOOM

⚠ WARNING

At the performance of function check for boom, ensure the safety so that hook and boom do not interfere with any personnel or object.

1. Check abnormal noise from boom and searcher hook during crane operation.
2. Operate crane without load and check each bolt so that no one is missing or loose.
3. Check hook for deformation, abnormal noise from bearing and correct function of wire rope latch (1).



[2] CHECKING MOMENT LIMITER FOR OPERATION (SEARCHER HOOK MODE)

⚠ WARNING

If you find any abnormality with the moment limiter, immediately contact us or our sales service agency.

1. Turn the starter switch to the "ON" position.
2. Check with the working status lamp. The red of the lamp lights up for 2 seconds and then the green lights up.
3. Check the moment limiter display unit.
Verify that no error codes are displayed on the "RATED TOTAL LOAD" display.
4. Shift the fall mode selector switch on moment limiter display unit to "Searcher hook mode" (all LED ON).
5. Start the engine and operate the crane as follows to verify that the moment limiter properly displays the value.

Crane Operation and Displayed Parameter	Value Displayed on Moment Limiter
Displayed "boom length" with the boom length at minimum	1.8 m
Displayed "boom length" with the boom length at maximum	5.5 m
Displayed "working radius" with the boom length of "2.9 m" and boom angle of "55.5 °"	1.5 ± 0.1 m
Displayed "ACTUAL LOAD" when the weight of the known weight was hoisted ★Must be equal to the total weight of weight + lifting ring ★Note that it may show some errors depending on the boom conditions.	Actual load

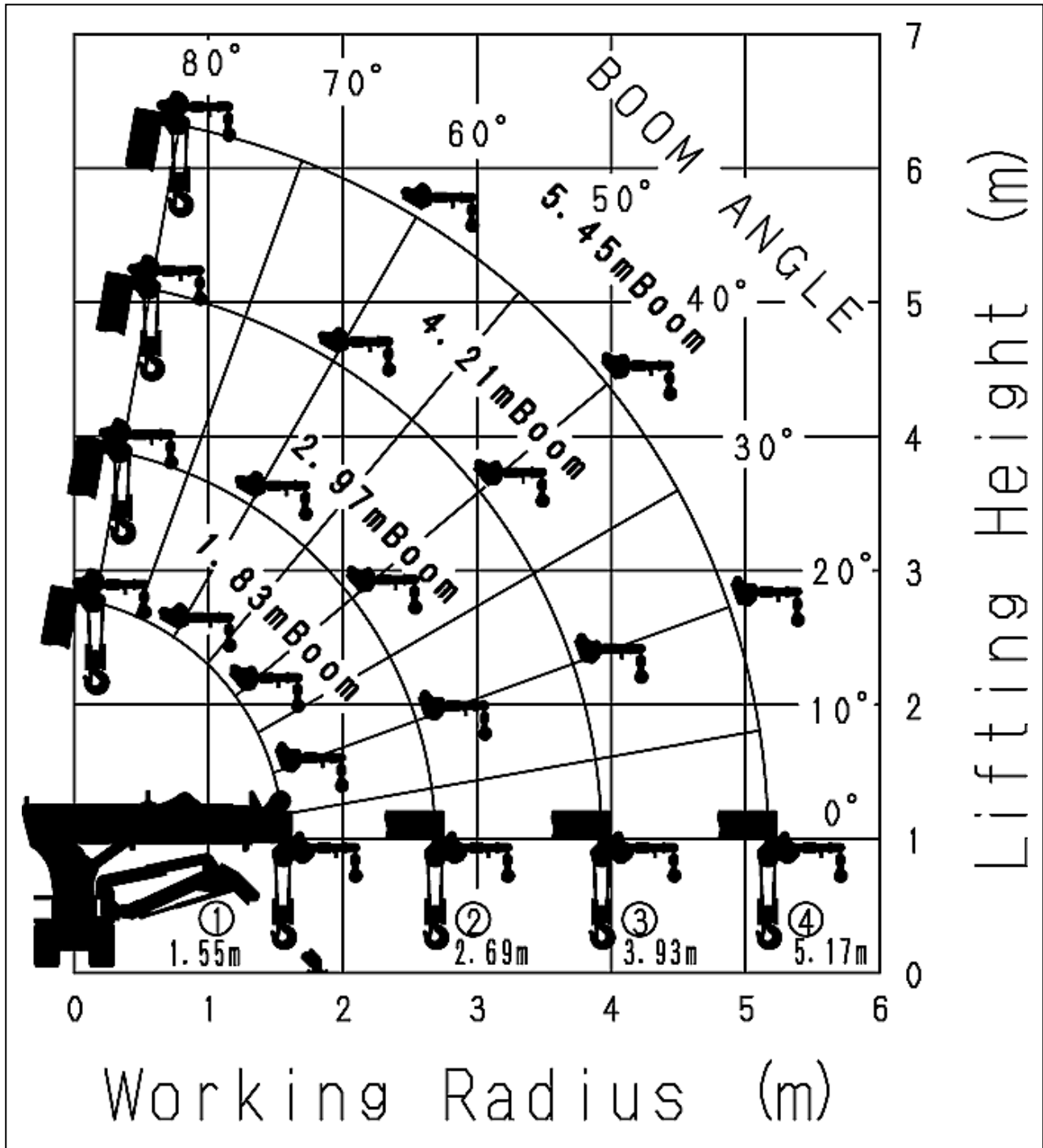
6. Operate the crane until the moment limiter display indicates the boom length is "2.9 m" (booms (1) + (2)) and boom angle is "55.5 degrees", then measure the "boom angle" and "working radius. If the measured value(s) differ from the moment limiter display value, contact MAEDA or MAEDA sales agency.

8. Working Range and Rated Total Load

⚠ DANGER

- When using the searcher hook, be sure to set searcher hook mode for moment limiter.
- Never use the searcher hook and the crane hook simultaneously.

8.1 Working Range Diagram for Searcher Hook



8.2 Rated Total Load Chart for Searcher Hook

Rated total load Chart with outrigger extended to maximum							
1.830m BOOM		2.965m BOOM		4.205m BOOM		5.445m BOOM	
Working radius (m)	Rated total load (kg)	Working radius (m)	Rated total load (kg)	Working radius (m)	Rated total load (kg)	Working radius (m)	Rated total load (kg)
Less than 1.00	300	Less than 1.00	300	Less than 1.30	300	Less than 1.70	300
1.30	300	1.30	300	1.50	300	2.00	300
1.55	300	1.50	300	2.00	300	2.50	300
--	--	2.00	300	2.50	300	2.80	300
--	--	2.50	300	3.00	300	3.00	300
--	--	2.69	300	3.50	300	3.50	300
--	--	--	--	3.93	300	4.00	250
--	--	--	--	--	--	4.50	200
--	--	--	--	--	--	5.17	150

Rated total load Chart with outrigger extended to other than maximum							
1.830m BOOM		2.965m BOOM		4.205m BOOM		5.445m BOOM	
Working radius (m)	Rated total load (kg)	Working radius (m)	Rated total load (kg)	Working radius (m)	Rated total load (kg)	Working radius (m)	Rated total load (kg)
Less than 1.00	300	Less than 1.00	300	Less than 1.30	300	Less than 1.70	300
1.30	300	1.30	300	1.50	300	2.00	300
1.55	300	1.50	300	2.00	300	2.50	300
--	--	2.00	300	2.50	300	2.80	250
--	--	2.50	300	3.00	250	3.00	250
--	--	2.69	300	3.50	150	3.50	150
--	--	--	--	3.93	100	4.00	100
--	--	--	--	--	--	4.50	50
--	--	--	--	--	--	5.17	50

1. This Rated Total Load Chart shows maximum allowable capacities. These rated total loads are based on the machine standing level on a firm ground supporting surface, under ideal job conditions and a freely suspended load.
2. Sufficient design tolerance must be used to ensure adequate ground support surface design. The rated total loads are for static conditions only, and do not include dynamic effects of swinging, extending, retracting, lowering, raising, wind or adverse conditions. Crane users must reduce rated total loads ratings to take all conditions into account.
3. The load radius shown in the Rated Total Load Chart is based on practical working radius including boom deflection due to loading. The crane user must calculate and compensate for boom deflection as the load is lifted.
4. Deductions from Searcher Hook Rated Total Load must be made for the weight of the searcher hook (10kg), block/ball and all rigging.
5. Crane users must consult the Operators Manual for complete details about assembly, operation, maintenance, configuration, and its limitations. Modifications to the crane, other than what is specified or supplied by the original equipment manufacture, can result in a reduction of rated total load ratings.
6. This operating range chart does not include boom deflections.