

Service Manual

09

Load Moment Indicator

Model **AML-LIIC**

Input/Output Signals of the AML System (GR-600-1/GR-800-1)

CN 2 connector		Signal names and functions
Pin No.	name	
22	Di20	<u>Signal name: Left swing operation detector switch input</u> Input from the switch detecting left swing operation. Switch ON (DC0V): No left swing operation is detected. Switch OFF (DC5V): Left swing operation is detected.
23	CNTL 3P	<u>Signal name: Boom raising proportional control valve output</u> Current controlled by the AML is output from the AML to the boom raising proportional control valve when the boom raising is stopped by elevation slow stop. Output voltage: Square wave 0 to 24V
24	CNTL 3N	<u>Signal name: Ground terminal for boom raising proportional control valve</u> Input voltage: DC0V
25	CNTL 4P	<u>Signal name: Boom lowering proportional control valve output</u> Current controlled by the AML is output from the AML to the boom lowering proportional control valve when the boom lowering is stopped by elevation slow stop. Output voltage: Square wave 0 to 24V
26	CNTL 4N	<u>Signal name: Ground terminal for boom lowering proportional control valve</u> Input voltage: DC0V

Functions of and How to Use User Mode (GR-450-1/GR-500-1)

Alarm Functions

Condition	Alarm
A control is moved toward critical side (hoist up, boom lowering or boom extension) while two-blocking condition exists.	Moment display: Displays [Warning:0024]. Buzzer: Sounds continuously.
Anti-two-block function is deactivated while two-blocking condition exists.	Moment display: Displays [Warning:0015]. External warning lamps: Red lamp is lit. Buzzer: Sounds continuously.
Moment ratio exceeds 90%.	Moment display: Yellow segment is lit. External warning lamps: Orange lamp is lit. Buzzer: Sounds intermittently.
A control is moved toward critical side While moment ratio exceeds 100%.	Moment display: Displays [Warning:0023]. External warning lamps: Red lamp is lit. Buzzer: Sounds continuously.
AML system error	Moment display: Displays failure messages. AML Buzzer: Sounds 3 seconds.
Working range limit function activated.	Moment display: Displays failure messages. Associated restriction indicator lamp flashes. Buzzer: Sounds continuously. AML Buzzer: Sounds 3 seconds.
Operated critical side when backward stability control activated.	Moment display: Displays [Warning:0025]. AML Buzzer: Sounds 3 seconds.
Slow stop control	Moment display: Displays [Warning:0081] or [0082]. AML Buzzer: Sounds 3 seconds.
Boom lift with jib mounted on boom (*4)	
(1) Moment ratio is between 84% and 94%. (2) Moment ratio is between 84% and 94%. (3) Moment ratio is between 82% and 92%.	Moment display: Corresponding segment is lit. External warning lamps : Orange lamp is lit. Buzzer: Sounds intermittently.
(1) Moment ratio exceeds [93%(*5)] 94% or more. (2) Moment ratio exceeds [92%(*5)] 94%. (3) Moment ratio exceeds [75%(*5)] 92%.	Moment display: Displays [Warning:0088]. External warning lamps : Red lamp is lit. Buzzer: Sounds continuously.

(*4):

(1) is applicable when the outriggers are extended to maximum (22'11-5/8" [7.0m]).

(2) is applicable when the outriggers are extended to middle (21'3-7/8" [6.5m]).

(3) is applicable when the outriggers are extended to middle (16'4-7/8" [5.0m]).

(*5): For the specification number of GR-500-1-00213 (1M1D-specification)

[NOTICE]

- ◆ In the above table, "Buzzer" is the device outside the AML unit, outputting buzzing sound. "AML buzzer" is the device inside the AML unit, outputting beeping sound.
- ◆ The AML buzzer sounds for 3 seconds every time a message appears. It outputs long sounds when slow stop control is activated and outputs short sounds when other controls are activated.

Selecting Operational Status

⚠ WARNING

⚠ Should the operational status be incorrectly registered, the crane may overturn or be damaged, leading to a serious accident. Prior to every operation, check that the registered status corresponds to the actual status of the crane.

Selecting Outrigger Status

[NOTICE]

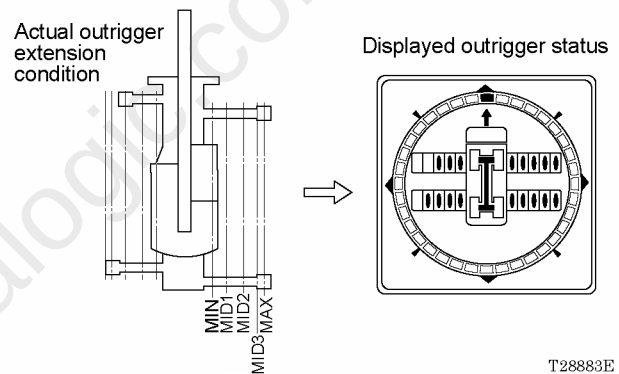
- ◆ The "on-rubber stationary" status is the default status and is automatically selected when the power supply is turned on (the PTO switch is placed in the "ON" position).
- ◆ Turning the power off (PTO switch: OFF) automatically erases all the previous settings stored in memory after approximately 2 hours. To resume the operation more than 2 hours after the power has been last turned off, enter the settings all over again.

Register the outrigger status using the outrigger mode select key and the register key.

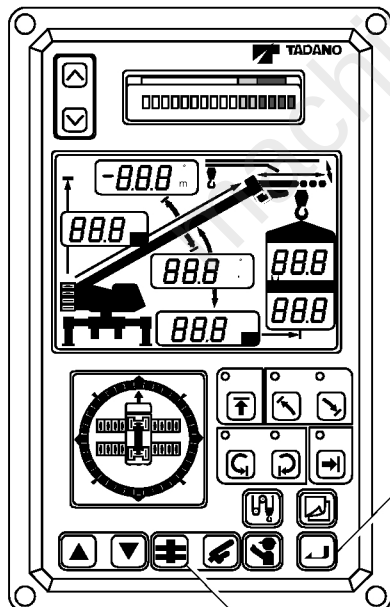
(1) On-outrigger operation

When the outrigger mode select key is pressed, the outrigger state symbols flash in accordance with the status that the AML detects.

After making sure that the display conforms to the actual outrigger conditions, press the register key. The outrigger state symbols will change from flashing to continuous lighting, and the moment display, rated lifting capacity display and actual load display will return to normal display conditions, meaning that the state has been registered.



T28883E



IW301-0231E11

	MAX (15' 5" (4.7m))
	MID3 (14' 1-1/4" (4.3m))
	MID2 (11' 5-3/4" (3.5m))
	MID1 (8' 2-3/8" (2.5m))
	MIN (5' 4-1/2" (1.64m))

T28884E

[ADJUSTMENT AND MAINTENANCE]

General: Adjustment Mode and Maintenance Mode

1. Keys and Switches for Adjustment and Maintenance

1. Scroll-up key Moment display
2. Scroll-down key

4. Increase key
5. Decrease key
7. Check key
3. Register key
6. Display alteration key

8. Moment input short-circuit switch
9. Protect switch
10. Moment adjuster display LED
11. Abnormality display

1. Scroll-up key
Used to see the previous lines of message displayed on the moment display.

2. Scroll-down key
Used to see the next lines of messages displayed on the moment display.

3. Register key
Used to register the selected state and write the adjustment value in EEPROM.

4. Increase key
Used to increase the adjustment value.

5. Decrease key
Used to decrease the adjustment value.

6. Display alteration key
Used to change the display to the upper menu.

7. Check key
Used for "Do Check" and "Ao Check" functions in the maintenance mode.

8. Moment input short-circuit switch
Not used for this machine.

9. Protect switch
Set this switch to OFF when changing the mode from user mode to adjustment mode. With this switch OFF, data in the EEPROM becomes rewritable.

10. Moment adjuster
This adjuster is for adjustment by the AML manufacturer's service personnel. Do not tamper.

11. Abnormality display LED
Lights when the AML is in abnormal conditions or when the AML adjustment is initialized.

3. Method of Shifting Modes

Scroll-up key Moment display
Scroll-down key



1. "User mode" - "Maintenance mode"
Press the scroll-up key, scroll-down key, and register key at the same time. Then, the moment display changes from the bargraph to [• Maintenance]. This display denotes the "Maintenance mode".
2. "Maintenance mode" - "User mode"
Press the display alteration key. When the bargraph shows up on the moment display, AML goes back to the "User mode".
3. "User mode" - "Adjustment mode"
Turn OFF the protect switch at the adjustment window on the top of AML. Then, the moment display will change to [• Adjust], and will denote "Adjustment mode".

4. "Adjustment mode" - "User mode"
While the main menu of the adjustment mode is displayed, turn ON the protect switch. Then AML will go back to "User mode" and bargraph will be displayed on the moment display.
5. "Maintenance mode" - "Adjustment mode"
While the main menu of the maintenance mode is displayed, turn OFF the protect switch. The moment display will change to [• Adjust], and will denote "Adjustment mode".

Adjustment Value Table

Specification No. : GR-500-1-00101, 00211, 00311 (2M2D-specification) $\triangle_1$:540384--

Specification No. : GR-500-1-00102 (1M1D-specification)

Specification No. : GR-500-1-00103, 00213 (1M1D-specification)

Specification No. : GR-500-1-00214 (2M2D-specification)

Specification No. : GR-500-1-00313 (1M1D-specification)

Specification No. : GR-450-1-00211, 00311 (2M2D-specification)

AML model : AML-LIIC

AML code No. $\triangle_1$ 361-929-10000
~~361-918-70000~~, 361-931-30000

AML code No. : 361-921-30000, 361-931-40000

AML code No. : 361-931-50000

1. Setting before adjustment

Capacity setting				
Head-off capacity setting	Jib selection	Single top selection	Winch drum position setting	
Not set	Not set	Not set	GR-500-1-00101 GR-500-1-00311	GR-500-1-00102
			GR-500-1-00211 GR-450-1-00211	GR-500-1-00103
			GR-500-1-00214 GR-450-1-00311	GR-500-1-00213
				GR-500-1-00313
			Not set	Set to "R" (rear)

2. Adjustment the detector

Precautions for adjustment

(*1) Adjust the center of dispersion to coincide to the adjusting value.

(*2) Adjust the boom angle and the moment in the elevating lowering operation.

(*3) Adjust the swing angle in the clockwise swing operation.

(*4) When adjusting the moment, make the number of parts of line to the standard number (four parts of line) that is when boom fully extended, and set the AML as Boom status: Boom and Number of parts of line:4.

Adjustment item		Condition	Adjustment value	Tolerance
Boom length	Zero-point adjustment	Boom length: Fully retracted	33.46ft (10.20m)	±0.13ft (±0.26ft for zero-point check)
	Span adjustment	Boom length: Fully extended	108.27ft (33.00m)	±0.13ft
Boom angle (*2)	Zero-point adjustment	Boom angle: 0.0° (actual value)	0.0°	±0.1° (±0.2° for zero-point check)
	Span adjustment	Boom angle: 80.0° (actual value)	80.0°	±0.1°
Swing angle (*3)	Zero-point adjustment	Swing position : front (Right swing)	Swing angle1:0.0°	±0.3° (±0.6° for zero-point check)
			Swing angle2:360.0°	±0.3° (±0.6° for zero-point check)
	Span adjustment	Swing position : rear (Right swing)	Swing angle1:180.0°	±0.3°
			Swing angle2:180.0°	±0.3°
Outrigger extension width	Zero-point adjustment	Outrigger extension width: MIN.	4.068ft (1.240m)	±0.020ft (±0.040ft for zero-point check)
	Span adjustment	Outrigger extension width: MAX.	11.484ft (3.500m)	±0.020ft

Full Version Available

Tadano GR-450-1, GR-600-1 and GR-800-1 Load Moment Indicator Service Manual

Tadano GR-450-1, GR-600-1 load moment indicator service manual with repair, calibration and troubleshooting guidance. Instant PDF download.

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