

Service Manual

Service Manual

AML-C

Load Moment Indicator
AML-C

B-1 Functions and How to use the User Mode

1.1 Mode Structure

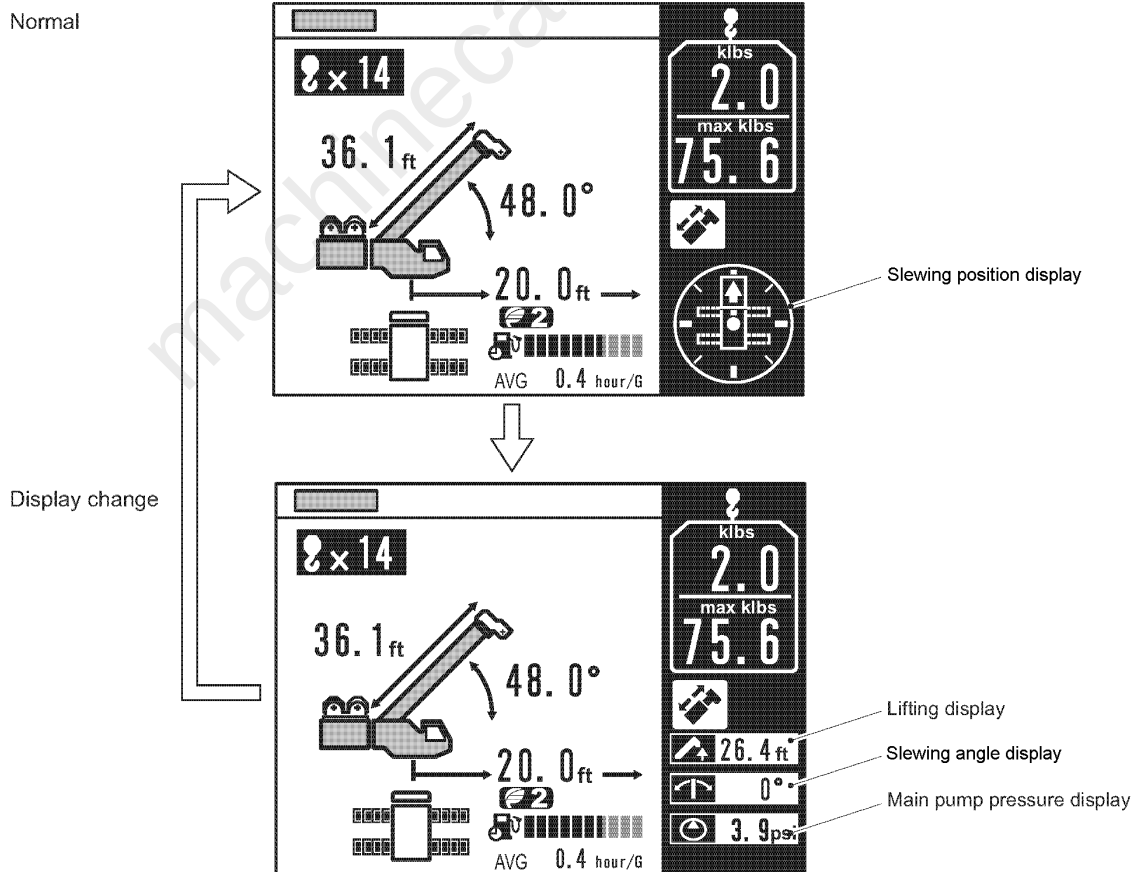
The AML has the following three basic operation modes.

This chapter describes the operation method in user mode.

- **User Mode:** Used by the operator to operate the crane.
- **Maintenance Mode:** Used to perform the AML operation check, reference of history information, etc. Also, some adjustment functions such as clock adjustment are included in the maintenance mode. For operation method of maintenance mode, refer to "Chapter C, Maintenance Mode."
- **Adjustment Mode:** Used to adjust detectors, actuators, etc. For operation method of adjustment mode, refer to "Chapter D, Adjustment Mode."

1.2 Display Selection

When the display change key  is pushed during normal state, the content of the display panel changes as shown below.



IW301-0414E13

6.3 Drum Indicator Control Function

6.3.1 Outline of Drum Indicator Control Function

The panel LED changes depending on the drum rotation speed of displayed drum. According to the main drum rotation and auxiliary drum rotation, the Do output (20 ms = 20/1000 second) is performed.

6.3.2 Input

- 1). #17216-1 Main drum rotation
- 2). #17216-2 Auxiliary drum rotation

6.3.3 Output

- 1). #17802-122 Main drum indicator Do output
- 2). #17708-123 Auxiliary drum indicator Do output

6.3.4 Panel LED Control

According to the rotation of displayed drum, the LED indicators (Fig. 6.3.1) in the AML-C body upper section are sequentially illuminated.

However with models that winch drum position is selected in the user preset menu, the illumination switching timing is calculated based on the information described in the table below (Table 6.3.1) according to the selected winch drum, and the control is performed.



Fig. 6.3.1 Panel drum indicator LED

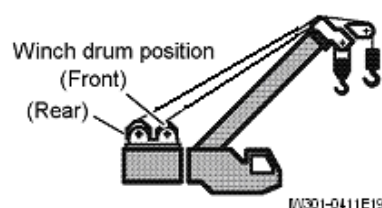
Table 6.3.1 Models with user preset menu selection, illumination switching timing
(Selection of adjustment method: "Rear" ↔ "Front/rear")

Operation status	Winch drum position status	Rotation detector (pulse)	Frequency dividing
Boom lift	Rear	Main winch drum	Number of main wire part-lines
Other than boom lift	Front	Auxiliary winch drum	Number of auxiliary wire part-lines
	Rear	Main winch drum	

Table 6.3.2 Models with user preset menu selection, illumination switching timing
(Selection of adjustment method: "Front" ↔ "Front/rear")

Operation status	Winch drum position status	Rotation detector (pulse)	Frequency dividing
Boom lift	Front	Main winch drum	Number of main wire part-lines
Other than boom lift	Front	Main winch drum	Number of auxiliary wire part-lines
	Rear	Auxiliary winch drum	

(Refer to Chapter B, 4.5.6 "Selection of Winch to be use")



B-8 Proportional Control Function

This section describes the deceleration and slow stop controls by the hydraulic pilot pressure restriction using the solenoid proportional valve.

8.1 Factors for Control

Factors for deceleration and slow stop include the conditions below. The slow stop function can be canceled by the switch input or software setting.

- Elevation slow stop

Load moment ratio 100% stop:	Elevation lowering
(Load ratio 100% stop)	
Backward stability stop:	Elevation raising
Working Range limit stop:	Elevation raising, elevation lowering
Elevating cylinder stroke end stop:	Elevation raising, elevation lowering
Re-stop:	Elevation lowering
Boom interference stop:	Elevation lowering
- Slewing slow stop

Working Range limit stop:	Right slewing, left slewing
Capacity change at O/R beam differential extension:	Right slewing, left slewing
Slewing free control:	Common with left and right slewing
- Speed limit

Elevation speed limit:	Elevation raising, elevation lowering
Slewing speed limit:	Right slewing, left slewing
- Other

Deceleration processing's (specific to particular models, etc.)

8.2 Elevation Slow Stop

The elevation slow stop functions with the stop positions by load moment ratio (load ratio) 100% stop, backward stability stop, working range limit stop, elevating cylinder stroke end stop, and boom interference stop adopted as the target stop angle. However, when multiple conditions are met, the control is implemented for the one having the smallest allowable angle in relation to the stop angle.

8.3 Slewing Slow Stop

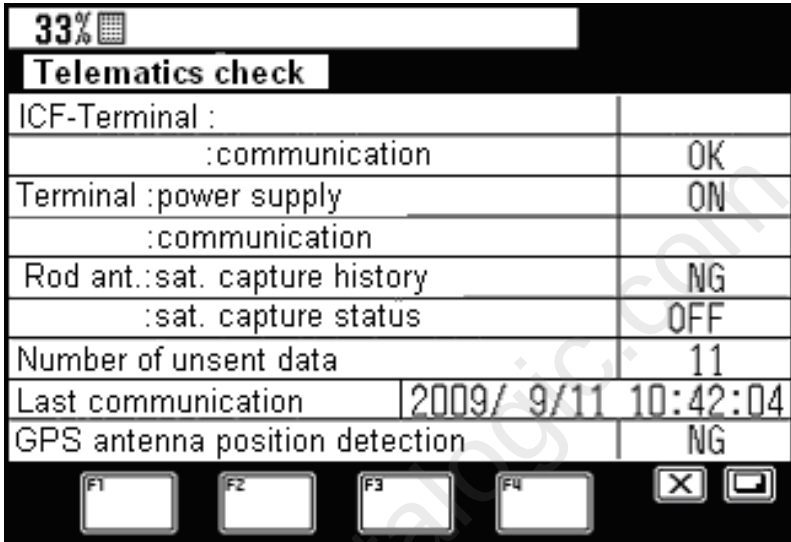
The slewing slow stop functions while adopting the stop positions by working range limit stop, shift to lower capacity at outrigger (O/R) slide beam differential extension, and boom interference stop as the target stop angle. However, when multiple conditions are met, the control is implemented for the one having the smallest allowable angle between the target stop angle and current slewing angle.

2.18 Telematics Check

To check various information of current Telematics status, select "Telematics Check" on the maintenance main menu shown in the Fig. 1.3.1 and press the  key. The display will go to the Telematics check screen shown in Fig. 2.18.1.

When the  key is pressed, the menu is quitted and the maintenance menu appears again.

The item "Telematics Check" is shown in the maintenance menu only while ICF is connected to the AML.



Telematics check	
ICF-Terminal :	
:communication	OK
Terminal :power supply	ON
:communication	
Rod ant.:sat. capture history	NG
:sat. capture status	OFF
Number of unsent data	11
Last communication	2009/ 9/11 10:42:04
GPS antenna position detection	NG

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Fig. 2.18.1 Telematics check screen

Item		Adjustment condition	Adjustment value (): Tolerance at inspections
Moment (NOTICE 2) (NOTICE 4) (NOTICE 5)	(Zero)	- Boom: Fully retracted - Indicated boom angle: $80.0 \pm 0.1^\circ$ - Load: No load (0.40 t main hook block only) - Hook block: Overwinding status	Actual load (Hook weight): 0.40 ± 0.20 t
	(Load radius)	- Boom: Full extended - Load radius: 9.00 m - Hoist medium load: 8.50 t	Load radius: 9.00 ± 0.07 m
	(Span)	- Boom: Full extended - Indicated boom angle: $40.0 \pm 0.1^\circ$ - Load: No load (0.40 t main hook block only) - Hook block: Hoist-down until just before touching the ground	Actual load (Hook weight): 0.40 ± 0.02 t

1.7.3 Slow Stop Adjustment

Item	Remarks
Elevation up/down characteristics measurement	Boom: Fully retracted
Slewing control characteristics measurement	Boom: Fully retracted Boom angle: Approx. 70°

1.7.4 Setting Item after Adjustment

Item	Set value	Remarks
Number of wire part-lines setting	Main: 4; Aux.: 1	
Language change	English	
Unit select	m/ton	Adjustment not needed

1.7.5 Option Setting

Item	Set value	Remarks
Telematics (alarm event)	In	Adjustment not needed

④17204 (Crane status detection signal)

No.	Signal name	Assigned terminal	Set state	Function
3	C/W mount detection 1	CAN.P1-1-Di5	ON: Mounted, OFF: Dismounted	Detects the counterweight mount status for the capacity selection.
4	C/W mount detection 2	CAN.P1-1-Di6	ON: Mounted, OFF: Dismounted	Detects the counterweight mount status for the capacity selection.
9	Jib mount/dismount detection	Di25	ON: Dismounted, OFF: Mounted	Deletes the jib operation setting and corrects the dead weight calculation in response to the jib dismounted state.
23	Slewing over-front detection	Di8	ON: Over-front, OFF: Other than over-front	Detects that the slewing position is in over-front.
24	Jib connecting pin detection	Di7	ON: Inserted (fixed), OFF: Removed	Detects the insertion of the connecting pin when the jib is stowed.
31	Slewing free detection	Di4	ON: Free, OFF: Lock	Detects the slewing free/lock status.
33	Jib extension detection	Di7	ON: Stowed, OFF: Extended	Detects the boom operation with jib extension.
34	Outrigger retraction operation detection	Ser.P2-Di1	ON: No operation, OFF: Operation	Detects that the outrigger retraction operation is performed.
35	Boom dismount detection	Di22	ON: Mounted, OFF: Dismounted	Detects that the boom is dismounted.
46	Spring detection	Ser.P2-Di2	ON: Lock OFF: Free	Detects the spring lock/free state.
105	Outrigger mount/dismount detection	Ser.P2-Di13	ON: Dismounted, OFF: Mounted	Detects the outrigger mount/dismount state.

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