snorkel

TB86J



SERVICE & MAINTENANCE MANUAL

Part Number 0114208-000

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12K GENERATOR

Troubleshooting

If generator voltage is consistent but low, proceed with the following sequence of troubleshooting.

1. Check Engine rpm: Engine rpm while generator is operating should be set at 2,100 rpm. This is essential for correct flow output from the main hydraulic pump to the generator motor.

CAUTION: DO NOT EXCEED MID THROTTLE SPECIFICATION OF 2,100 RPM. OVERSPEEDING THE ENGINE COULD OVERSPEED THE GENERATOR RESULTING IN DAMAGE TO THE INTERNAL VOLTAGE REGULATOR AND/OR ARMATURE.

2. Check Maximum Flow Adjustment on Pump:

   a. Threaded rod protruding from back of pump should be 11/16" in length from the pump housing. Include the jam nut in the measurement.

3. Check Pump Pressure:

   a. Standby pressure should be approximately 350-400 psi.

   b. Maximum system pressure should be approximately 2,800-3,000 psi.

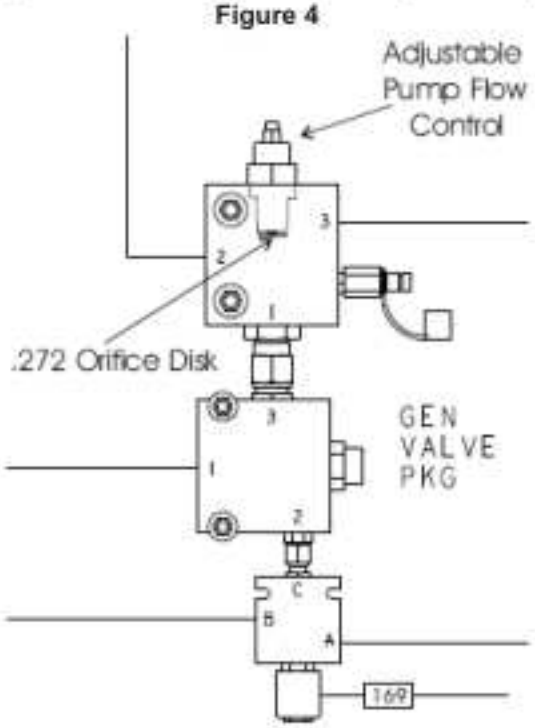
4. Check Generator rpm:

   a. Using a strobe tachometer, measure the AC generator rpm at the shaft end of the generator. The generator should measure 3,600 rpm but shall not exceed 3,600 rpm.

NOTE: EXCEEDING 3600 RPM ON THE AC GENERATOR MAY RESULT IN DAMAGE TO THE INTERNAL VOLTAGE REGULATOR AND/OR ARMATURE.

   b. If the generator does not measure 3,600 rpm but the pump pressure, pump flow, and engine rpm are correct; the generator flow control valve may need adjustment (Figure 4).

Figure 4



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OVERLOAD CALIBRATION

1. Turn the upper control/lower control select switch to lower control position. Then turn battery disconnect switch on and actuate the emergency stop button on the lower control box.
2. Stow booms and center turntable.
3 Depress ESC button for approximately 10 seconds on LCD display until (HELP PRESS ENTER) message appears.
4. Scroll right until screen displays (ACCESS LEVEL 3) press enter on display.
5. Use the up/down, left/right arrows to enter access code 2222 and press enter. The display should show (ACCESS LEVEL 2).
6. Scroll right until (SETUPS) message appears and press enter.
7. Scroll right until (LOAD SETUPS) message appears, and press enter.
8. Scroll right until (CALIBRATE LOAD) message appears and press enter.
9. Follow prompts on the screen to calibrate overload.
10. Display will show (REDO LOADED?) select Yes.
11. Screen will now display (PLATFORM LOADED?) load the platform with weight (500 lbs / 227 kg) centered in the platform. These weights need to be accurate.
12. Display will display (REDO EMPTY?). Use the up arrow to select Yes and remove Load.
13. Display will now display (PLATFORM EMPTY?). Use the up arrow to select Yes.
14. If calibration was accepted screen will display(caldate:00/00/00) use the up/down, left/right arrows to enter the date of calibration MM/DD/YY
15. Depress enter and screen will show (FINISHED).
16. Depress ESC several times to return to (SETUPS).
17. Cycle power and Ensure (DIAGNOSTICS>SYSTEM>OVERLOADED=NO)
18. Put weight (500 lbs / 227 kg) on platform plus fifty pounds (50 lbs / 23 kg) and extend the boom to verify overload operates correctly and disables functions.
19. When machine goes into overload, observe the screen at lower controls and lights at upper controls, then operate override switch at upper controls to make sure override switch functions correctly.
20. Actuate the emergency stop button and turn the battery disconnect switch to the off position. Then remove weight.

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ELECTRICAL SCHEMATIC

Board Pin Outs

VCCM

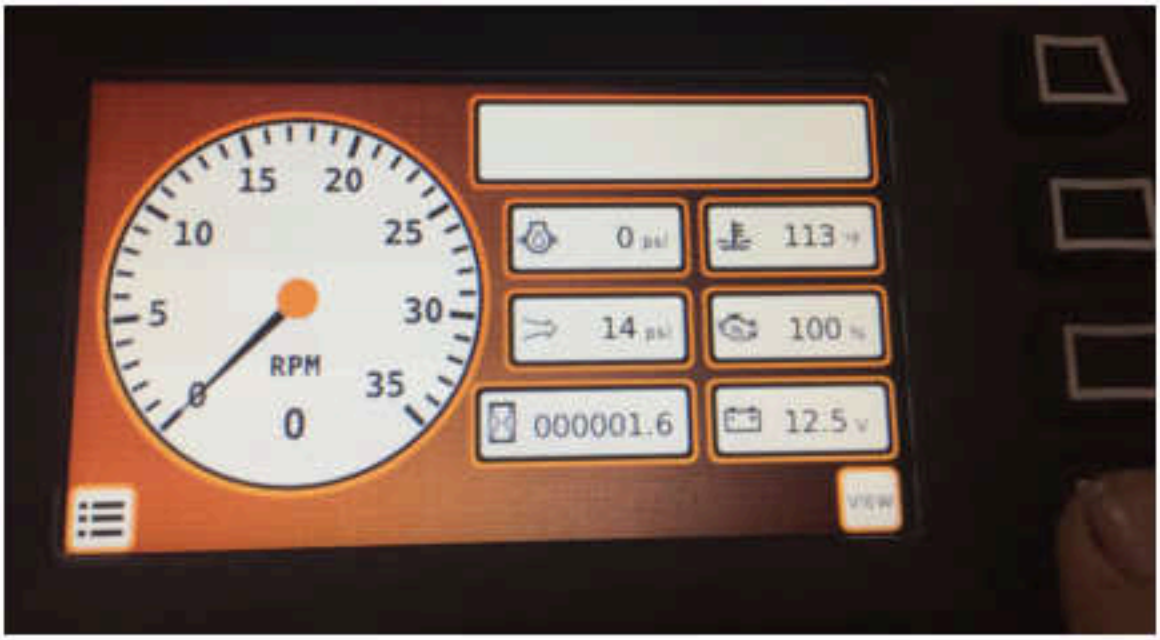
Terminal	Input/Output	Function	
VP1-1	Positive Supply	Drive Forward	
VP1-2	Current PWM	Drive Forward	
VP2-1	Positive Supply	Dive Reverse	
VP2-2	Current PWM	Drive Reverse	
VP3-1	Positive Supply	Swing CW	
VP3-2	Current PWM	Swing CW	
VP4-1	Positive Supply	Swing CCW	
VP4-2	Current PWM	Swing CCW	
VP5-1	Positive Supply	Boom Lift	
VP5-2	Current PWM	Boom Lift	
VP6-1	Positive Supply	Boom Lower	
VP6-2	Current PWM	Boom Lower	
VP11-1	Supply	TBM B+	
VP11-2	Ground	TBM B-	
VP12-1	CAN High	CAN bus to GP400	
VP12-2	CAN Low	CAN bus to GP400	
VP13-1	CAN High	CAN bus to GP440	
VP13-2	CAN Low	CAN bus to GP440	
VP13-3	Ground	CAN bus to GP440	

Continued on next page...

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MURPHY DISPLAY

Kubota V2403 Turbo Diesel T4F and T4

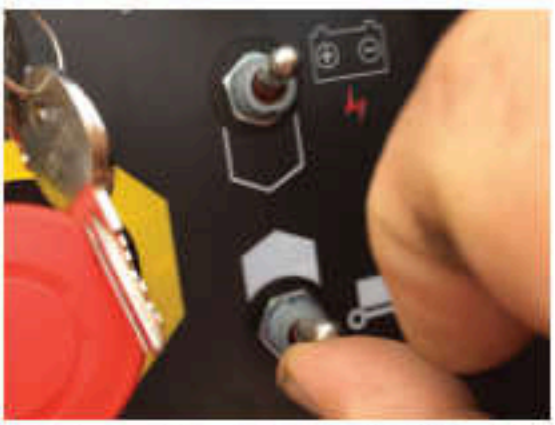


Check Throttle Operation

1. On the Home Screen, press the Main/ENG button to enter the Engine Display Screen and then the Gauge Display Screen.
2. To check Mid Throttle, hold up Enable Switch and read Tachometer.
3. To check High Throttle, with engine running hold up on Platform Level and Boom Up at the same time.
4. The View button will return to the Home Screen.

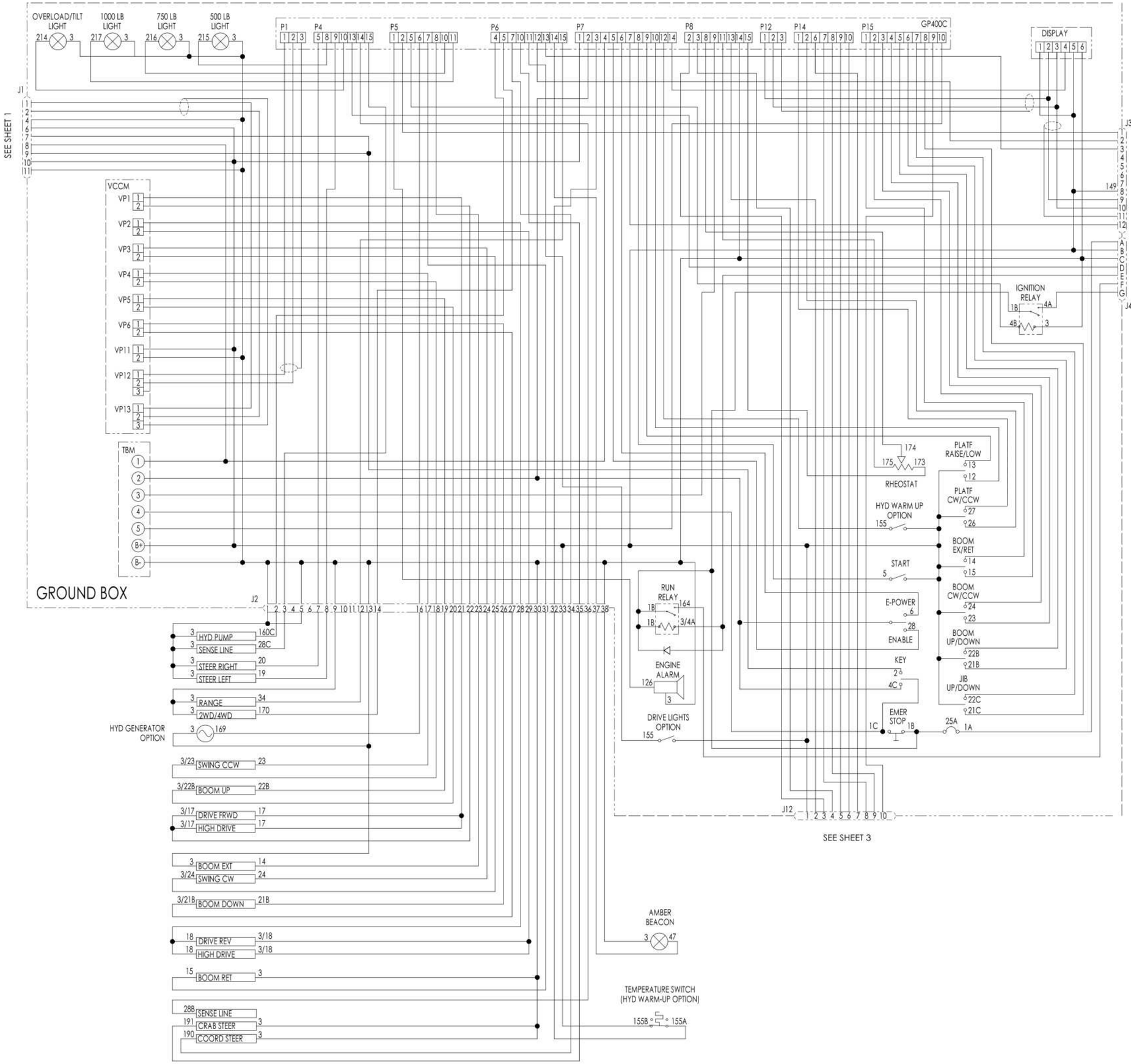


Holding Platform Level and Boom Up to check High Throttle.



Holding Enable Switch to check Mid Throttle.

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GP400 I/O LIST

TERM	I/O TYPE	DESTINATION
P1-1	CAN1H	CANBUS TO VCCM
P1-2	CAN1L	
P1-3	GND	
P4-5	High side PWM output	Steer right
P4-8	High side PWM output	500lb region light
P4-9	High side PWM output	Steer left
P4-10	High side PWM output	Overload (on) / Tilt (flashing) lamp
P4-13	Safe High side output	Starter relay
P4-14	Safe High side output	Load sense dump valve
P4-15	Safe High side output	Dump valve
P5-1	High side PWM output	Engine alarm
P5-2	High side 2A output	Emergency power relay
P5-5	High side 2A output	Ignition power for engine
P5-6	High side 2A output	Generator valve
P5-7	High side PWM output	Boom retract
P5-8	High side PWM output	Boom extend
P5-10	High side PWM output	750lb region light
P5-11	High side PWM output	1000lb region light
P6-4	High side 2A output	jib/basket/steer enable valve
P6-5	High side 2A output	2 wheel drive enable valve
P6-7	High side 2A output	Coordinated Steer valve
P6-10	High side 2A output	Crab Steer valve
P6-11	High side 2A output	Drive Lights
P6-12	High side 2A output	Horn
P6-13	High side 2A output	Motion Alarm
P6-14	High side 2A output	Beacon
P6-15	High side 2A output	Low range drive valve
P7-1	B+ Digital Input	TBM B+ (also used for sw. common)
P7-2	B+ Digital Input	ground select & TBM # 2
P7-3	B+ Digital Input	Hydraulic thermal sw (normal closed (not hot))
P7-4	B+ Digital Input	platform select & TBM #1
P7-5	B+ Digital Input	Enable
P7-6	B+ Digital Input	Emergency power
P7-7	B+ Digital Input	Crankcase pressure switch
P7-8	B+ Digital Input	Engine start
P7-9	B+ Digital Input	platform level up
P7-10	B+ Digital Input	platform level down
P7-12	B+ Digital Input	Hydrolic warm up sw
P7-14	Negative (B-) Digital Input	Engine alarm signal (from Murphy Display)
P8-2	Safe Analog Input	Boom angle sensor #1
P8-3	Analog Input	Boom angle sensor #2
P8-8	Analog Input	Speed adjustment rheostat
P8-9	Analog Input	TBM #3
P8-11	+5V via 1K	supply for speed adjustment pot
P8-13	GND	Angle Transducer Ground
P8-14	GND	TBM B-
P8-15	GND	supply for speed adjustment pot
P12-1	CAN2 H	Murphy Display >> Engine ECU
P12-2	CAN2 L	Murphy Display >> Engine ECU
P12-3	CAN2 gnd	Ground
P14-1	B+ Digital Input	platform rotate CCW
P14-2	B+ Digital Input	platform rotate CW
P14-6	B+ Digital Input	750lb DUAL CAP LIMIT SW (NO)
P14-7	B+ Digital Input	750lb DUAL CAP LIMIT SW (NC)
P14-8	B+ Digital Input	Elevation switch (NO)
P14-9	B+ Digital Input	1000lb DUAL CAP LIMIT SW (NO)
P14-10	B+ Digital Input	1000lb DUAL CAP LIMIT SW (NC)
P15-1	B+ Digital Input	boom extend
P15-2	B+ Digital Input	boom retract
P15-3	B+ Digital Input	swing CW
P15-4	B+ Digital Input	swing CCW
P15-5	B+ Digital Input	boom up
P15-6	B+ Digital Input	boom down
P15-7	B+ Digital Input	jib up
P15-8	B+ Digital Input	jib down
P15-9	B+ Digital Input	Elevation switch (NC)
P15-10	B+ protected Supply	TBM #5 (boost supply)

VCCM I/O LIST

TERM	I/O TYPE	DESTINATION
VP1-1	Valve 1 positive supply	Drive fwd prop. valve
VP1-2	Current control PWM output	
VP2-1	Valve 2 positive supply	Drive reverse prop. Valve
VP2-2	Current control PWM output	
VP3-1	Valve 3 positive supply	Swing CW prop. Valve
VP3-2	Current control PWM output	
VP4-1	Valve 4 positive supply	Swing CCW prop. Valve
VP4-2	Current control PWM output	
VP5-1	Valve 5 positive supply	Boom Lift
VP5-2	Current control PWM output	
VP6-1	Valve 6 positive supply	Boom Lower
VP6-2	Current control PWM output	
VP11-1	12/24V module supply	from TBM B+
VP11-2	GND module supply	from TBM B-
VP12-1	CANH	P1-1 GP400
VP12-2	CANL	P1-2 GP400
VP12-3	GND	Ground
VP13-1	CANH	PP11-1 GP440
VP13-2	CANL	PP11-2 GP440
VP13-3	GND	PP11-3 GP440

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