

11.1 Troubleshooting

11.1.1 Alarm Display Table

The relation between alarm displays and alarm code outputs is shown in Table 11.1.

If an alarm occurs, the servomotor can be stopped by doing either of the following operations.

- DB STOP: Stops the servomotor immediately using the dynamic brake.
- COAST TO A STOP: Stops naturally, with no brake, by using the friction resistance of the motor in operation.

Table 11.1 Alarm Displays and Outputs

Alarm Display	Alarm Name	Meaning	Alarm Reset	Alarm Code Output			Servo Alarm (ALM) Output
				ALO1	ALO2	ALO3	
A.02	Parameter Breakdown	EEPROM data of SERVOPACK is abnormal.	N/A				
A.03	Main Circuit Encoder Error (Not detected for the SERVOPACKs with the capacity of 6.0 kW or more.)	Detection data for power circuit is abnormal.	Available				
A.04	Parameter Setting Error	The parameter setting is outside the allowable setting range.	N/A				
A.05	Combination Error	SERVOPACK and servomotor capacities do not match each other.	Available	H	H	H	H
A.09	Dividing Ratio Setting Error *1	The setting of dividing ratio (Pn212) is not acceptable (out of fixed increments), or exceeds the value for the connected, encoder resolution.	N/A				
A.0A	Encoder Model Unmatched *1	The mounted serial encoder is not supported by Σ -II series SERVOPACK.	N/A				
A.10	Overcurrent or Heat Sink Overheated	An overcurrent flowed through the IGBT. Heat sink of SERVOPACK was overheated.	N/A	L	H	H	H
A.30	Regeneration Error Detected	Regenerative transistor or regenerative resistor is faulty.	Available				
A.32	Regenerative Overload	Regenerative energy exceeds regenerative resistor capacity.	Available	L	L	H	H
A.33	Main Circuit Power Supply Wiring Error	The power supply to the main circuit does not match the parameter Pn001 setting.	Available				
A.40	Overvoltage *2	Main circuit DC voltage is excessively high.	Available	H	H	L	H
A.41	Undervoltage *2	Main circuit DC voltage is excessively low.	Available				
A.51	Overspeed	The motor speed is excessively high.	Available	L	H	L	H
A.71	Overload: High Load	The motor was operating for several seconds to several tens of seconds under a torque largely exceeding ratings.	Available				
A.72	Overload: Low Load	The motor was operating continuously under a torque largely exceeding ratings.	Available				
A.73	Dynamic Brake Overload	When the dynamic brake was applied, rotational energy exceeded the capacity of dynamic brake resistor.	Available	L	L	L	H
A.74	Overload of Surge Current Limit Resistor	The main circuit power was frequently turned ON and OFF.	Available				
A.7A	Heat Sink Overheated	The heat sink of SERVOPACK overheated.	Available				

Table 11.1 Alarm Displays and Outputs (Cont'd)

Alarm Display	Alarm Name	Meaning	Alarm Reset	Alarm Code Output			Servo Alarm (ALM) Output
				ALO1	ALO2	ALO3	
A.81	Encoder Backup Error	All the power supplies for the absolute encoder have failed and position data was cleared.	N/A	H	H	H	H
A.82	Encoder Checksum Error	The checksum results of encoder memory is abnormal.	N/A				
A.83	Absolute Encoder Battery Error	Backup battery voltage for the absolute encoder has dropped.	Available				
A.84	Encoder Data Error	Data in the encoder is abnormal.	N/A				
A.85	Encoder Overspeed	The encoder was rotating at high speed when the power was turned ON.	N/A				
A.86	Encoder Overheated	The internal temperature of encoder is too high.	N/A				
A.b1	Reference Speed Input Read Error	The A/D converter for reference speed input is faulty.	Available				
A.b2	Reference Torque Input Read Error	The A/D converter for reference torque input is faulty.	Available				
A.b3	Current Detection Error *1	The current sensor is faulty, the servomotor is disconnected, or the Servo ON command was input while the servomotor was operating.	Available				
A.bF	System Alarm	A system error occurred in the SERVOPACK.	N/A				
A.C1	Servo Overrun Detected	The servomotor ran out of control.	Available	L	H	L	H
A.C8	Absolute Encoder Clear Error and Multiturn Limit Setting Error	The multiturn for the absolute encoder was not properly cleared or set.	N/A				
A.C9	Encoder Communications Error	Communications between SERVOPACK and encoder is not possible.	N/A				
A.CA	Encoder Parameter Error	Encoder parameters are faulty.	N/A				
A.Cb	Encoder Echoback Error	Contents of communications with encoder is incorrect.	N/A				
A.CC	Multiturn Limit Disagreement	Different multiturn limits have been set in the encoder and SERVOPACK.	N/A				
A.d0	Position Error Pulse Overflow	Position error pulse exceeded parameter (Pn505).	Available	L	L	H	H
A.F1	Power Line Open Phase	One phase is not connected in the main power supply.	Available	H	L	H	H
A.F5 A.F6	Servomotor Disconnection Alarm *1	The servomotor will not operate, or the power is not being supplied to the servomotor, though the Servo ON command was input and the command to the SERVOPACK was valid.	Available	H	L	H	H
CPF00	Digital Operator	Digital operator (JUSP-OP02A-2) fails to communicate with SERVOPACK (e.g., CPU error).	N/A	Not decided			
CPF01	Transmission Error		N/A				
A.--	Not an error	Normal operation status	-	H	H	H	L

* 1. Occurred when only the software version number is later than 32.

* 2. For the SERVOPACK with a capacity of 6.0 kW or more, alarm A.40 indicates detecting excessively high/low voltage in the main circuit.

11.1.2 Warning Display

The relation between warning displays and warning code outputs is shown in table 11.2.

Table 11.2 Warning Displays and Outputs

Warning Display	Warning Name	Meaning	Warning Code Output		
			ALO1	ALO2	ALO3
A.90	Excessive Position Error Warning *	The position errors exceed the setting in Pn51E.	L	H	H
A.91	Overload	This warning occurs before the overload alarms (A.71 or A.72) occur. If the warning is ignored and operation continues, an overload alarm may occur.	L	H	H
A.92	Regenerative Overload	This warning occurs before the regenerative overload alarm (A.32) occurs. If the warning is ignored and operation continues, a regenerative overload alarm may occur.	H	L	H
A.93	Absolute Encoder Battery Voltage Lowered	This warning occurs when the absolute encoder battery voltage is lowered. If the warning is ignored and operation continues, an overload alarm may occur.	L	L	H

* Occurred when only the software version is 32 or later.

Note: Warning code is not output without setting Pn001 = n.1□□□ (Outputs both Alarm Codes and Warning Codes.)

11.1.3 Troubleshooting of Alarm and Warning

When an error occurs in servo drive, an alarm display such as A.□□ and CPF□□ or warning display such as A.9□□ appears on the panel operator. However, the display “A.-” is not an alarm. Refer to the following sections to identify the cause of an alarm and the action to be taken.

Contact your Yaskawa representative if the problem cannot be solved by the described corrective action.

(1) Alarm Display and Troubleshooting

Table 11.3 Alarm Display and Troubleshooting

Alarm Display	Alarm Name	Situation at Alarm Occurrence	Cause	Corrective Actions
A.02	Parameter Breakdown (The EEPROM data storing the parameter is incorrect.)	Occurred when the control power supply was turned ON.	The control power supply ranged from 30 VAC to 60 VAC.	Correct the power supply, and set Fn005 to initialize the parameter.
			The power supply was turned OFF while changing the parameter setting. The power supply was turned OFF while an alarm was being written.	Set Fn005 to initialize the parameter and input the parameter again.
			The number of times that parameters were written exceeded the limit. For example, the parameter was changed every scan through the host controller.	Replace the SERVOPACK. (Recheck the parameter writing method.)
			The SERVOPACK EEPROM and the related circuit are faulty.	Replace the SERVOPACK.
A.03	Main Circuit Encoder Error (Not detected for the SERVOPACK with the capacity of 6.0 kW or more)	Occurred when the control power supply was turned ON or during operation	The control power supply ranged from 30 VAC to 60 VAC.	Correct the power supply.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.
A.04	Parameter Setting Error (The parameter setting was out of the allowable setting range.)	Occurred when the control power supply was turned ON.	The incorrect parameter was being loaded. (The incorrect value was rejected as an error at the digital operator.)	Set Fn005 to initialize the parameter.
			The SERVOPACK EEPROM and the related circuit are faulty.	Replace the SERVOPACK.
A.05	Combination Error (The SERVOPACK and servomotor capacities do not correspond.)	Occurred when the control power supply was turned ON.	The SERVOPACK and servomotor capacities do not correspond to each other. Servomotor capacity / SERVOPACK capacity $\leq 1/4$ or servomotor capacity / SERVOPACK capacity ≥ 4	Select the proper combination of SERVOPACK and servomotor capacities.
			The parameter that is written in the encoder is incorrect.	Replace the servomotor (encoder).
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
A.09	Dividing Ratio Setting Error	Occurred when the control power supply was turned ON.	At Pn207.2=1, the setting of dividing ratio (Pn212) is not acceptable (out of fixed increments), or exceeds the value for the connected encoder resolution.	Correct the setting of Pn212, and turn OFF the control power and turn it ON again.
			The SERVOPACK EEPROM and the related circuit are faulty.	Replace the SERVOPACK.
A.0A	Encoder Model Unmatched	Occurred when the control power supply was turned ON.	The connected serial encoder is not supported by SGDM SERVOPACK.	Replace the servomotor with SGDM SERVOPACK supported model.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.

Table 11.3 Alarm Display and Troubleshooting (Cont'd)

Alarm Display	Alarm Name	Situation at Alarm Occurrence	Cause	Corrective Actions
A.10	Overcurrent (An overcurrent flowed through the IGBT) or Heat Sink Overheated	Occurred when the control power supply was turned ON.	The overload alarm has been reset by turning OFF the power too many times.	Change the method to reset the alarm.
			The connection is faulty between the SERVOPACK board and the thermostat switch.	Replace the SERVOPACK.
			The SERVOPACK board fault occurred.	
		Occurred when the main circuit power supply was turned ON or when an overcurrent occurred while the servomotor was running.	The connection between grounding and U, V, or W is incorrect.	Check and then correct the wiring.
			The grounding line has contact with other terminals.	
			A short circuit occurred between the grounding and U, V, or W of the servomotor cable.	Repair or replace the servomotor main circuit cable.
			A short circuit occurred between phases U, V, and W of the servomotor.	
			The wiring of the regenerative resistor is incorrect.	Check and then correct the wiring.
			A short circuit occurred between the grounding and U, V, or W of the SERVOPACK.	Replace the SERVOPACK.
			A SERVOPACK fault occurred (current feedback circuit, power transistor or board fault).	
			A short circuit occurred between the grounding and U, V, W of the servomotor.	Replace the servomotor.
			A short circuit occurred between phases U, V, and W of the servomotor.	
			The dynamic brake was activated too frequently, so a DB overload alarm occurred.	Replace the SERVOPACK, and reduce the DB operation frequency.
			The overload alarm has been reset by turning OFF the power too many times.	Change the method to reset the alarm.
			The excessive change was given to the position/speed reference.	Recheck the reference value.
			The overload or regenerative power exceeds the regenerative resistor's capacity.	Reconsider the load and operation conditions.
			The direction or the distance of the SERVOPACK to other devices is incorrect. Heat radiation of the panel or heat around the panel occurred.	The surrounding air temperature for the SERVOPACK must be 55°C or less.
A SERVOPACK fan fault occurred.	Replace the SERVOPACK.			
A SERVOPACK fault occurred.				
A.30	Regeneration Error Detected (Detected only when the power to the main circuit is ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the main circuit power supply was turned ON.	An external regenerative resistor is not connected for a servomotor of 6.0 kW or more.	Connect an external regenerative resistor.
			Pn600 is set to a value other than 0 for a servomotor of 400 W or less, and an external regenerative resistor is not connected.	Connect an external regenerative resistor, or set Pn600 to 0 if an external regenerative resistor is not connected.
			Check for incorrect wiring or a disconnected wire in the regenerative resistor.	Correct the wiring for the external regenerative resistor.
			A SERVOPACK fault occurred, such as regenerative transistor or a voltage sensor fault.	Replace the SERVOPACK.
			The jumper between B2 and B3 is removed for a servomotor of 500 W or more, and 5.0 kW or less.	Correct the wiring.
		Occurred during normal operation.	Check for incorrect wiring and disconnection of the regenerative resistor.	Correct the wiring for the external regenerative resistor.
			The regenerative resistor is disconnected, so the regenerative energy became excessive.	Replace the regenerative resistor or replace the SERVOPACK. Reconsider the load and operation conditions.
			A SERVOPACK fault, such as regenerative transistor and voltage sensor fault, occurred.	Replace the SERVOPACK.

Table 11.3 Alarm Display and Troubleshooting (Cont'd)

Alarm Display	Alarm Name	Situation at Alarm Occurrence	Cause	Corrective Actions
A.32	Regenerative Overload (Detected only when the power to the main circuit is ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the main circuit power supply was turned ON.	The power supply voltage is 270 V or more.	Correct the input voltage.
		Occurred during normal operation (large increase of regenerative resistor temperature).	The regenerative energy is excessive.	Select a proper regenerative resistance capacity, or reconsider the load and operation conditions.
			The regenerating state continued.	
		Occurred during normal operation (small increase of regenerative resistor temperature).	The setting of parameter Pn600 is smaller than the external regenerative resistor's capacity.	Correct the set value of parameter Pn600.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.
Occurred at servomotor deceleration.	The regenerative energy is excessive.	Select a proper regenerative resistance capacity, or reconsider the load and operation conditions.		
A.33	Main Circuit Wiring Error (Detected only when the power to the main circuit is ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the main circuit power supply was turned ON.	In the DC power input mode, AC power is supplied through L1 and L2 or L1, L2, and L3.	For AC power input, Pn001.2=0.
			In the AC power input mode, DC power is supplied through ⊕1 and ⊖ terminals.	For DC power input, Pn001.2=1.
			Pn600 is set to 0 if the regenerative resistance is disconnected.	Set Pn600 to 0.
A.40	Overvoltage (Detected when the SERVOPACK's main circuit DC voltage is 240 V (100 V class)/420 V (200 V class) or more.) (Detected only when the power to the main circuit is ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the main circuit power supply was turned ON.	The AC power voltage is too high.	The AC power voltage must be within the specified range.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.
		Occurred during normal operation.	Check the AC power voltage (check if there is no excessive voltage change.)	The AC power voltage must be within the specified range.
			The motor speed is high and load moment of inertia is excessive, resulting in insufficient regenerative capacity.	Reconsider the load and operation conditions. Check the load moment of inertia and minus load specifications.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.
Occurred at servomotor deceleration.	The motor speed is high, and the load moment of inertia is excessive.	Reconsider the load and operation conditions.		
A.41	Undervoltage (Detected when the SERVOPACK's main circuit DC voltage is 85 V (100 V class)/170 V (200 V class) or less.) (Detected only when the power to the main circuit is ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the main circuit power supply was turned ON.	The AC power supply voltage is low.	The AC power supply voltage must be within the specified range.
			The fuse of the SERVOPACK is blown out.	Replace the SERVOPACK.
			The inrush current limit resistor is disconnected, resulting in an abnormal power supply voltage or in an overload of the inrush current limit resistor.	Replace the SERVOPACK. Check the power supply voltage, and reduce the number of times that the main circuit is turned ON or OFF.)
			A SERVOPACK fault occurred.	Replace the SERVOPACK.
		Occurred during normal operation.	The AC power supply voltage was lowered, and large voltage drop occurred.	The AC power supply voltage must be within the specified range.
			A temporary power failure occurred.	Clear and reset the alarm, and restart the operation.
			The servomotor main circuit cable is short-circuited.	Repair or replace the servomotor main circuit cable.
			The servomotor is short-circuited.	Replace the servomotor.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.

11.1.3 Troubleshooting of Alarm and Warning

Table 11.3 Alarm Display and Troubleshooting (Cont'd)

Alarm Display	Alarm Name	Situation at Alarm Occurrence	Cause	Corrective Actions
A.51	Overspeed (Detected when the feedback speed is the maximum motor speed $\times 1.2$ or more for the SGMGH servomotor, and $\times 1.1$ or more for the other servomotors.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when servo was ON.	The order of phases U, V, and W in the servomotor wiring is incorrect.	Correct the servomotor wiring.
			The encoder wiring is incorrect.	Correct the encoder wiring.
			Malfunction occurred due to noise interference in the encoder wiring.	Take measures against noise for the encoder wiring.
		Occurred when the servomotor started running or in a high-speed rotation.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
			The order of phases U, V, and W in the servomotor wiring is incorrect.	Correct the servomotor wiring.
			The encoder wiring is incorrect.	Correct the encoder wiring.
			Malfunction occurred due to noise interference in the encoder wiring.	Take measures against noise for the encoder wiring.
			The position or speed reference input is too large.	Reduce the reference value.
		The setting of the reference input gain is incorrect.	Correct the reference input gain setting.	
A SERVOPACK board fault occurred.	Replace the SERVOPACK.			
A.71 A.72	Overload A.71: Instantaneous Peak Load A.72: Continuous Peak Load	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the servo was ON.	The servomotor wiring is incorrect or the connection is faulty.	Correct the servomotor wiring.
			The encoder wiring is incorrect or the connection is faulty.	Correct the encoder wiring.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the servomotor did not run by the reference input.	The servomotor wiring is incorrect or the connection is faulty.	Correct the servomotor wiring.
			The encoder wiring is incorrect or the connection is faulty.	Correct the encoder wiring.
			The starting torque exceeds the maximum torque.	Reconsider the load and operation conditions, or reconsider the servomotor capacity.
		A SERVOPACK board fault occurred.	Replace the SERVOPACK.	
		Occurred during normal operation.	The actual torque exceeds the rated torque or the starting torque largely exceeds the rated torque.	Reconsider the load and operation conditions, or reconsider the servomotor capacity.
			Temperature in the SERVOPACK panel is high.	Reduce the in-panel temperature to 55°C or less.
A SERVOPACK board fault occurred.	Replace the SERVOPACK.			
A.73	Dynamic Brake Overload	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the servomotor was running and in a status other than servo OFF.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the servomotor was running in servo OFF status.	The rotating energy at a DB stop exceeds the DB resistance capacity.	①Reduce the motor speed, ②Reduce the load moment of inertia, or ③Reduce the number of times of the DB stop operation.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
A.74	Overload of Surge Current Limit Resistor (Detected when the number of times that the main circuit's power is turned ON or OFF more than 10 times/2 seconds.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred during operations other than the turning ON/OFF of the main circuit.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred at the main circuit power supply ON/OFF operation.	The surge current limit resistor operation frequency at the main circuit power supply ON/OFF operation exceeds the allowable range.	Reduce the number of times that main circuit's power supply can be turned ON/OFF to 5 times/min. or less.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.

Table 11.3 Alarm Display and Troubleshooting (Cont'd)

Alarm Display	Alarm Name	Situation at Alarm Occurrence	Cause	Corrective Actions
A.7A	Heat Sink Overheated (Detected when the heat sink temperature exceeds 100°C.)	Occurred when the control power supply was turned ON.	A SERVOPACK fault occurred.	Replace the SERVOPACK.
			The overload alarm has been reset by turning OFF the power too many times.	Change the method to reset the alarm.
		Occurred when the main circuit power supply was turned ON or while the servomotor was running.	The load exceeds the rated load.	Reconsider the load and operation conditions, or reconsider the servomotor capacity.
			The SERVOPACK surrounding air temperature exceeds 55°C.	The surrounding air temperature must be 55°C or less.
A.81	Encoder Backup Error (Detected on the encoder side.) (Only when an absolute encoder is connected.)	Occurred when the control power supply was turned ON. (Setting: Pn002.2=1)	A SERVOPACK board fault occurred when an absolute encoder is used with the setting for incremental encoder.	Replace the SERVOPACK.
			Alarm occurred when the power to the absolute encoder was initially turned ON.	Set up the encoder.
		Occurred when the control power supply was turned ON using an absolute encoder. (Setting: Pn002.2=0)	The encoder cable had been disconnected once.	First confirm the connection and set up the encoder.
			The power from both the PG power supply (+5 V) and the battery power supply from the SERVOPACK is not being supplied.	Replace the battery or take similar measures to supply power to the encoder, and set up the encoder.
			An absolute encoder fault occurred.	If the alarm cannot be reset by setting up the encoder again, replace the encoder.
A SERVOPACK fault occurred.	Replace the SERVOPACK.			
A.82	Encoder Checksum Error (Detected on the encoder side.)	Occurred when the control power supply was turned ON or during an operation.	A fault occurred in the encoder and was detected by encoder self-diagnosis.	Set up the encoder. If this alarm occurs frequently, replace the servomotor.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.
		Occurred when the SEN signal turned ON.	A fault occurred in the encoder and was detected by encoder self-diagnosis.	Set up the encoder. If this alarm occurs frequently, replace the servomotor.
A.83	Absolute Encoder Battery Error (Detected when the battery voltage is lower than the specified value 2 to 4 s after the control power supply is turned ON.) (Only when an absolute encoder is connected.)	When the control power supply was turned ON. (Setting: Pn002.2=1)	When the absolute encoder was used as an incremental, a SERVOPACK board fault occurred.	Replace the SERVOPACK.
			The battery connection is incorrect.	Reconnect the battery.
		When the control power supply was turned ON using an absolute encoder. (Setting: Pn002.2=0)	The battery voltage is lower than the specified value 2.7 V.	Replace the battery, and then turn ON the power to the encoder.
A.84	Encoder Data Error (Detected on the encoder side.)	Occurred when the control power supply was turned ON.	A malfunction occurred in the encoder.	Turn the encoder power supply OFF and then ON again. If this alarm occurs frequently, replace the servomotor.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred during normal operation.	A malfunction occurred in the encoder due to external noise.	Correct the wiring around the encoder by separating the encoder cable from the power line, or by checking the grounding and other wiring.)
			An encoder fault occurred.	If this alarm occurs frequently, replace the servomotor.
A.85	Encoder Over-speed (Detected when the encoder power supply was turned ON.) (Detected on the encoder side.)	Occurred when the control power supply was turned ON.	When the encoder power supply turns ON and the SEN signal is ON when using an absolute encoder, the servomotor runs at 200 min ⁻¹ or more.	Turn ON the encoder power supply when the servomotor runs at a speed less than 200 min ⁻¹ .
			An encoder fault occurred.	Replace the servomotor.
		Occurred during normal operation.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
			An encoder fault occurred.	Replace the servomotor.
A SERVOPACK board fault occurred.	Replace the SERVOPACK.			

Table 11.3 Alarm Display and Troubleshooting (Cont'd)

Alarm Display	Alarm Name	Situation at Alarm Occurrence	Cause	Corrective Actions
A.86	Encoder Overheated (Only when an absolute encoder is connected.) (Detected on the encoder side.)	Occurred when the control power supply was turned ON.	An encoder fault occurred.	Replace the servomotor.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred during normal operation.	The surrounding air temperature around the servomotor is too high.	The surrounding air temperature must be 40°C or less.
			The servomotor load is greater than the rated load.	The servomotor load must be within the specified range.
			An encoder fault occurred.	Replace the servomotor.
A SERVOPACK board fault occurred.	Replace the SERVOPACK.			
A.b1	Reference Speed Input Read Error (Detected when the Servo is ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred during normal operation.	A malfunction occurred in reading section of the speed reference input.	Clear and reset the alarm and restart the operation.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
A.b2	Reference Torque Input Read Error (Detected when the servo is ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred during normal operation.	A malfunction occurred in the reading section of the torque reference input.	Clear and reset the alarm and restart the operation.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
A.b3	Current Detection Error	Occurred when the control power supply was turned ON.	The current sensor is faulty.	Replace the SERVOPACK.
		Occurred when the servo was ON.	The current sensor is faulty.	Replace the SERVOPACK.
			The Servo ON command was input while the servomotor was operating.	Check to be sure the servomotor has stopped, and then input the Servo ON command.
			The servomotor is disconnected.	Correct the servomotor wiring.
		Occurred during normal operation.	The current sensor is faulty.	Replace the SERVOPACK.
The servomotor was disconnected.	Correct the servomotor wiring.			
A.bF	System Alarm (Program error) • Software operation time exceeded • Stack overflow • Micro program error	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred during normal operation.	A program is incorrect.	Replace the SERVOPACK. (Contact your Yaskawa representative.)
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
A.C1	Servo Overrun Detected (Detected when the servo is ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the servo was ON or a reference was input.	The order of phase U, V, and W in the servomotor wiring is incorrect.	Correct the servomotor wiring.
			An encoder fault occurred.	Replace the servomotor.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.
A.C8	Absolute Encoder Clear Error and Multi-turn Limit Setting Error	Occurred when the control power supply was turned ON.	An encoder fault occurred.	Replace the servomotor.
		Occurred when an encoder alarm was cleared and reset.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
			An encoder fault occurred.	Replace the servomotor.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.

Table 11.3 Alarm Display and Troubleshooting (Cont'd)

Alarm Display	Alarm Name	Situation at Alarm Occurrence	Cause	Corrective Actions
A.C9	Encoder Communications Error	Occurred when the control power supply was turned ON or during operation.	The encoder wiring and the contact are incorrect.	Correct the encoder wiring.
			Noise interference occurred due to incorrect encoder cable specifications.	Use tinned annealed copper twisted-pair or twisted-pair shielded wire with a core of at least 0.12 mm ² .
			Noise interference occurred because the wiring distance for the encoder cable is too long.	The wiring distance must be 20 m max.
			The noise interference occurred on the signal line because the encoder cable is bent and the sheath is damaged.	Correct the encoder cable layout.
			The encoder cable is bundled with a high-current line or near a high-current line.	Correct the encoder cable layout so that no surge is applied.
			The FG electrical potential varies because of the influence from such machines on the servomotor side as welders.	Ground the machine separately from PG side FG.
			Noise interference occurred on the signal line from the encoder.	Take a measure against noise for the encoder wiring.
			Excessive vibration and shocks were applied to the encoder.	Reduce the machine vibration or mount the servomotor securely.
			An encoder fault occurred.	Replace the servomotor.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
A.CA	Encoder Parameter Error	Occurred when the control power supply was turned ON.	An encoder fault occurred.	Replace the servomotor.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
A.Cb	Encoder Echo-back Error	Occurred when the control power supply was turned ON or during operation.	The encoder wiring and contact are incorrect.	Correct the encoder wiring.
			Noise interference occurred due to incorrect encoder cable specifications.	Use tinned annealed copper twisted-pair or twisted-pair shielded wire with a core of at least 0.12 mm ² .
			Noise interference occurred because the wiring distance for the encoder cable is too long.	The wiring distance must be 20 m max.
			Noise interference occurred on the signal line, because the encoder cable is bent and the sheath is damaged.	Correct the encoder cable layout.
			The encoder cable is bundled with a high-current line or near a high-current line.	Correct the encoder cable layout so that no surge is applied.
			The FG electrical potential varies because of the influence from such machines on the servomotor side as welders.	Ground the machine separately from PG side FG.
			Noise interference occurred on the signal line from the encoder.	Take measures against noise for the encoder wiring.
			Excessive vibration and shocks to the encoder was applied.	Reduce the machine vibration or mount the servomotor securely.
			An encoder fault occurred.	Replace the servomotor.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
A.CC	Multiturn Limit Disagreement	Occurred when the control power supply was turned ON.	The parameter settings for the SERVOPACK are incorrect.	Correct the setting of Pn205 (0 to 65535).
			The multiturn limit value for the encoder is not set or was changed.	Execute Fn013 at the occurrence of alarm.
		Occurred during normal operation.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.

Table 11.3 Alarm Display and Troubleshooting (Cont'd)

Alarm Display	Alarm Name	Situation at Alarm Occurrence	Cause	Corrective Actions
A.d0	Position Error Pulse Overflow (In servo ON status, the position error pulses exceed the overflow level set in the parameter Pn505.)	Occurred when the control power supply was turned ON.	The overflow level (Pn505) is incorrect.	Make the value set in the Pn505 to other than 0.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred at the servomotor high-speed rotation.	The contact in the servomotor U, V, and W wirings is faulty.	Correct the servomotor wiring.
				Correct the encoder wiring.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		The servomotor did not run with position reference input.	Wirings of the servomotor U, V, and W are incorrect.	Correct the servomotor wiring.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Normal movement, but occurred with a long distance reference input.	The SERVOPACK gain adjustment is improper.	Increase the speed loop gain (Pn100) and position loop gain (Pn102).
			The position reference pulse frequency is too high.	Adjust slowly the position reference pulse frequency.
				Apply the smoothing function.
Correct the electronic gear ratio.				
Setting of the overflow level (Pn505) is incorrect.	Set the parameter Pn505 to proper value.			
The servomotor specifications do not meet the load conditions such as torque and moment of inertia.	Reconsider and correct the load and servomotor capacity.			
A.F1	Power Line Open Phase (In the main power supply ON status, the voltage stays low for 1 second or more at one of the phases R, S, and T.) (Detected when the main circuit power supply turns ON.)	Occurred when the control power supply was turned ON.	A SERVOPACK fault occurred.	Replace the SERVOPACK.
			The three-phase power supply wiring is incorrect.	Correct the power supply wiring.
			The three-phase power supply is unbalanced.	Balance the power supply by changing phases.
	Occurred when the servomotor was running.	A SERVOPACK fault occurred.	Replace the SERVOPACK.	
		The contact in three-phase power supply wiring is faulty.	Correct the power supply wiring.	
		Three-phase power supply is unbalanced.	Balance the power supply.	
A.F5 A.F6	Servomotor Disconnection Alarm (The servomotor will not operate, or the power is not being supplied to the servomotor, though the Servo ON command was input and the command to the SERVOPACK was valid.)	Occurred when the control power supply was turned ON.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
			A SERVOPACK board fault occurred.	Replace the SERVOPACK.
		Occurred when the servo was ON.	The Servomotor was disconnect.	Correct the servomotor wiring.
CPF00	Digital Operator Transmission Error 1 *1	Occurred when the power supply was turned ON with digital operator connected or	The contact between the digital operator and the SERVOPACK is faulty.	Insert securely the connector, or replace the cable.
			The external noise interference occurred to the digital operator or cable. (The digital operator cable is near noise source.)	Do not lay the cable near noise source. Install digital operator far from noise source.
CPF01	Digital Operator Transmission Error 2 *2	when connecting digital operator with the power supply was turned ON.	A digital operator fault occurred.	Replace the digital operator.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.

* 1. This alarm occurs when the communications is still disabled five seconds after digital operator power supply is ON, or when digital operator communications disabled status stays while an application module is connected.

* 2. This alarm occurs when digital operator received data error occurs consecutively five times, or when the state that digital operator receives no data from SERVOPACK for one second or more occurs consecutively three times.

(2) Warning Display and Troubleshooting

Table 11.4 Warning Display and Troubleshooting

Warning Display	Warning Name	Situation at Warning Occurrence	Cause	Corrective Actions
A.90	Excessive Position Error Warning: Warning for the alarm A.d0 (In servo ON status, the position error pulses exceed the excessive position error warning level set in the parameter Pn51E.)	Occurred at the servomotor high-speed rotation.	The contact in the servomotor U, V, and W wirings is faulty.	Correct the servomotor wiring.
			A SERVOPACK board fault occurred.	Correct the encoder wiring.
		The servomotor did not run with position reference input.	The contact in the servomotor U, V, and W wirings is faulty.	Replace the SERVOPACK.
			A SERVOPACK board fault occurred.	Correct the servomotor wiring.
		Normal movement, but occurred with a long distance reference input.	The SERVOPACK gain adjustment is improper.	Replace the SERVOPACK.
			The position reference pulse frequency is too high.	Increase the speed loop gain (Pn100) and position loop gain (Pn102).
				Adjust slowly the position reference pulse frequency.
				Apply the smoothing function (Pn204 or Pn208).
			Setting of the position error pulse over flow warning level (Pn51E) is incorrect.	Correct the electronic gear ratio (Pn202, Pn203).
			The servomotor specifications do not meet the load conditions such as torque and moment of inertia.	Set the parameter Pn51E to proper value.
A.91	Overload: Warning for the alarms A71 and A72 In either of the following cases: 1. 20% of the overload detection level of A71 2. 20% of the overload detection level of A72.	Occurs when the servo was ON.	Wiring is incorrect and the contact in servomotor wiring is faulty.	Reconsider and correct the load and servomotor capacity.
			Wiring is incorrect and the contact in encoder wiring is faulty.	Correct the servomotor wiring.
			A SERVOPACK fault occurred.	Correct the encoder wiring.
		The servomotor did not run with a reference input.	Servomotor wiring is incorrect and the contact is faulty.	Replace the SERVOPACK.
			Encoder wiring is incorrect and the contact is faulty.	Correct the servomotor wiring.
			The starting torque exceeds the maximum torque.	Correct the encoder wiring.
			A SERVOPACK fault occurred.	Reconsider the load and operation conditions. Or, check the servomotor capacity.
		Occurred during normal operation.	The effective torque exceeds the rated torque.	Replace the SERVOPACK.
			Temperature in the SERVOPACK panel is high.	Reconsider the load and operation conditions. Or, check the servomotor capacity.
			A SERVOPACK fault occurred.	Reduce the in-panel temperature to 55°C or less.
A.92	Regenerative Overload: Warning for the alarm A320	Occurred when the control power supply was turned ON.	A SERVOPACK fault occurred.	Replace the SERVOPACK.
		Occurred during normal operation (Large increase of regenerative resistor temperature.)	Regenerative energy is excessive.	Check the regenerative resistor capacity, or reconsider the load and operation conditions.
			Regenerative status continues.	
		Occurred during normal operation (Small increase of regenerative resistor temperature).	The setting of parameter Pn600 is smaller than the external regenerative resistor capacity.	Correct the setting of parameter Pn600.
			A SERVOPACK fault occurred.	Replace the SERVOPACK.
Occurred at servomotor deceleration.	Regenerative energy is excessive.	Check the regenerative resistor capacity, or reconsider the load and operation conditions.		

Table 11.4 Warning Display and Troubleshooting (Cont'd)

Warning Display	Warning Name	Situation at Warning Occurrence	Cause	Corrective Actions
A.93	Absolute Encoder Battery Warning (The battery voltage stays below the specified value 4 seconds after the control power supply was turned ON.) (Only when an absolute encoder is connected.)	Occurred when the control power supply was turned ON (Setting: Pn002.2=1).	A SERVOPACK board fault occurred. (The absolute encoder is used in the incremental encoder setting.)	Replace the SERVOPACK.
		Occurred 4 seconds or more after the control power supply was turned ON (Setting: Pn002.2=0). When an absolute encoder was used.	The battery connection is incorrect or faulty.	Connect correctly the battery.
			The battery voltage is lower than the specified value 2.7 V.	Replace the battery, and turn OFF the encoder power supply and ON again.
		A SERVOPACK board fault occurred.	Replace the SERVOPACK.	

11.1.4 Troubleshooting for Malfunction without Alarm Display

The troubleshooting for the malfunctions that causes no alarm display is listed below.

Contact your Yaskawa representative if the problem cannot be solved by the described corrective actions.

Table 11.5 Troubleshooting for Malfunction without Alarm Display

Symptom	Cause	Inspection	Corrective Actions
		■: Turn OFF the servo system before executing operations.	
Servomotor Does Not Start	The control power supply is not ON.	Check voltage between control power supply terminals.	Correct the control power circuit.
	The main circuit power supply is not ON.	Check the voltage between power supply terminals.	Correct the power circuit.
	Wrong wiring or disconnection of I/O signal connector CN1	Check if the connector CN1 is properly inserted and connected.	Correct the connector CN1 connection.
	Servomotor or encoder wiring disconnected.	Check the wiring.	Connect the wiring.
	Overloaded	Run under no load.	Reduce load or replace with larger capacity servomotor.
	Speed/position references not input	Check reference input pins.	Input speed/position references correctly.
	Setting for Pn50A to Pn50D "Input Signal Selection" is incorrect.	Check settings of parameters Pn50A to Pn50D.	Correct the settings for Pn50A to Pn50D "Input Signal Selection."
	Encoder type differs from parameter setting.	Check incremental or absolute encoder.	Set parameter Pn002.2 to the encoder type being used.
	/S-ON input signal stays OFF.	Check settings of parameters Pn50A.0 and Pn50A.1.	Correct the parameter setting and turn ON /S-ON input signal.
	/P-CON input function setting is incorrect.	Check parameter Pn001.1.	Set parameters to match the application.
	SEN input is turned OFF.	Check the SEN signal input (when absolute encoder is used).	Turn SEN input signal ON.
	Reference pulse mode selection is incorrect.	Check the parameter setting for the reference pulse mode.	Correct setting of parameter Pn200.0.
	Speed control: Speed reference input is incorrect.	Check V-REF and SG to confirm if the control method and the input are agreed.	Correct the control mode selection parameter, or the input.
	Torque control: Torque reference input is incorrect.	Check V-REF and SG to confirm if the control method and the input are agreed.	Correct the control mode selection parameter, or the input.
	Position control: Reference pulse input is incorrect.	Check Pn200.0 reference pulse form or sign + pulse signal.	Correct the control mode selection parameter, or the input.
	The error clear counter (CLR) input is turned ON.	Check CLR or /CLR input pins (CN1-14 and -15).	Turn CLR or /CLR input signal OFF.
The forward run prohibited (P-OT) or reverse run prohibited (N-OT) input signal is turned OFF.	Check P-OT or N-OT input signal.	Turn P-OT or N-OT input signal ON.	
A SERVOPACK fault occurred.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.	
Servomotor Moves Instantaneously, and then Stops	Servomotor wiring is incorrect.	Check the servomotor wiring.	Correct the servomotor wiring.
	Encoder wiring is incorrect.	Check the encoder wiring.	Correct the encoder wiring.

Table 11.5 Troubleshooting for Malfunction without Alarm Display (Cont'd)

Symptom	Cause	Inspection	Corrective Actions
		■: Turn OFF the servo system before executing operations.	
Servomotor Suddenly Stops during Operation and will Not Restart	An alarm occurred while alarm reset signal (ALM-RST) was turned ON.	Check the alarm reset signal.	Remove the cause of alarm. Turn alarm reset signal (ALM-RST) from ON to OFF.
Servomotor Speed Unstable	Wiring connection to servomotor is defective.	Check connection of power lead (phases U, V, and W) and encoder connectors.	Tighten any loose terminals or connectors.
Servomotor Rotates Without Reference Input	Speed control: Speed reference input is incorrect.	Check V-REF and SG to confirm if the control method and the input are agreed.	Correct the control mode selection parameter, or the input correctly.
	Torque control: Torque reference input is incorrect.	Check V-REF and SG to confirm if the control method and the input are agreed.	Correct the control mode selection parameter, or the input correctly.
	Speed reference offset is error.	The SERVOPACK offset is adjusted incorrectly.	Adjust the SERVOPACK offset correctly.
	Position control: Reference pulse input is incorrect.	Check Pn200.0 reference pulse form or sign + pulse signal.	Correct the control mode selection parameter, or the input correctly.
	A SERVOPACK fault occurred.	A SERVOPACK board fault occurred.	Replace the SERVOPACK.
DB (dynamic brake) Does Not Operate	Improper parameter setting	Check the setting of parameter Pn001.0.	Correct the parameter setting.
	DB resistor disconnected	Check if excessive moment of inertia, motor overspeed, or DB frequently activated occurred.	Replace the SERVOPACK, and reconsider the load.
	DB drive circuit fault	DB circuit parts are faulty.	Replace the SERVOPACK.
Abnormal Noise from Servomotor	Mounting not secured	Check if there are any loosen mounting screws.	Tighten the mounting screws.
		Check if there are misalignment of couplings.	Align the couplings.
		Check if there are unbalanced couplings.	Balance the couplings.
	Defective bearings	Check for noise and vibration around the bearings.	If any problems, contact your Yaskawa representative.
	Vibration source on the driven machine	Any foreign matter, damages, or deformation on the machine movable section.	Contact the machine manufacturer.
	Noise interference due to incorrect input signal wire specifications	The specifications of input signal wires must be: Twisted-pair or twisted-pair shielded wire with core 0.12 mm ² min. and tinned annealed copper twisted wire.	Use the specified input signal wires.
	Noise interference due to long distance of input signal line	The wiring distance must be 3 m max. and the impedance a few hundreds ohm max.	Shorten the wiring distance for input signal line to the specified value.
	Noise interference due to incorrect encoder cable specifications	The specifications of encoder cable must be: Twisted-pair or twisted-pair shielded wire with core 0.12 mm ² min. and tinned annealed copper twisted wire.	Use the specified encoder cable.
	Noise interference due to long encoder cable wiring distance	The wiring distance must be 20 m max.	Shorten the encoder cable wiring distance to the specified value.
	Noise due to damaged encoder cable	Check if the encoder cable is not damaged or bent.	Modify the encoder cable layout.
	Excessive noise to the encoder cable	Check if the encoder cable is bundled with high-current line or near the high-current line.	Install a surge suppressor to the encoder cable.
	FG electrical potential varies by influence of such machines on the servomotor side as welders.	Check if the machine is correctly grounded.	Ground the machine separately from PG side FG.
	SERVOPACK pulse counting error due to noise	Check if there is noise interference on the signal line from encoder.	Take measure against noise for the encoder wiring.
	Excessive vibration and shock to the encoder	Vibration from the machine occurred or servomotor installation is incorrect. (Mounting surface accuracy, fixing, alignment, etc.)	Reduce vibration from the machine, or secure the servomotor installation.
Encoder fault	An encoder fault occurred.	Replace the servomotor.	

Table 11.5 Troubleshooting for Malfunction without Alarm Display (Cont'd)

Symptom	Cause	Inspection	Corrective Actions
		■: Turn OFF the servo system before executing operations.	
Servomotor Vibrates at about 200 to 400 Hz	Speed loop gain value (Pn100) too high.	Factory setting: Kv=40.0 Hz Refer to 9.3.2 Servo Gain Manual Tuning.	Reduce speed loop gain (Pn100) preset value.
	Position loop gain value (Pn102) too high	Factory setting: Kp=40.0/s Refer to 9.3.2 Servo Gain Manual Tuning.	Reduce position loop gain (Pn102) preset value.
	Incorrect speed loop integral time constant (Pn101) setting	Factory setting: Ti=20.00 ms Refer to 9.3.2 Servo Gain Manual Tuning.	Correct the speed loop integral time constant (Pn101) setting.
	When the autotuning is used: Incorrect machine rigidity setting	Check the machine rigidity setting (Fn001).	Select a proper machine rigidity setting (Fn001).
	When the autotuning is not used: Incorrect rotational moment of inertia ratio data	Check the rotational moment of inertia ratio data (Pn103).	Correct the rotational moment of inertia ratio data (Pn103).
High Rotation Speed Overshoot on Starting and Stopping.	Speed loop gain value (Pn100) too high	Factory setting: Kv=40.0 Hz Refer to 9.3.2 Servo Gain Manual Tuning.	Reduce the speed loop gain (Pn100) preset value.
	Position loop gain value (Pn102) too high	Factory setting: Kp=40.0/s Refer to 9.3.2 Servo Gain Manual Tuning.	Reduce the position loop gain (Pn102) preset value.
	Incorrect speed loop integral time constant (Pn101) setting	Factory setting: Ti=20.00 ms Refer to 9.3.2 Servo Gain Manual Tuning.	Correct the speed loop integral time constant (Pn101) setting.
	When the autotuning is used: Incorrect machine rigidity setting	Check the machine rigidity setting (Fn001).	Select a proper machine rigidity setting (Fn001).
	When the autotuning is not used: Incorrect rotational moment of inertia ratio data	Check the rotational moment of inertia ratio data (Pn103).	Correct the rotational moment of inertia ratio data (Pn103). Use the mode switch setting function.
Absolute Encoder Position Difference Error (The position saved in host controller when the power turned OFF is different from the position when the power turned ON.)	Noise interference due to improper encoder cable specifications	The specifications of encoder cable must be: Twisted-pair or twisted-pair shielded wire with core 0.12 mm ² min. and tinned annealed copper twisted wire.	Use encoder cable with the specified specifications.
	Noise interference because the encoder cable distance is too long.	The wiring distance must be 20 m max.	The encoder cable distance must be within the specified range.
	Noise interference due to damaged encoder cable	Noise interference occurred to the signal line because the encoder cable is bent or its sheath damaged.	Correct the encoder cable layout.
	Excessive noise to the encoder cable	Check if the encoder cable is bundled with a high-current line or near high-current line.	Change the encoder cable layout so that no surge is applied.
	FG electrical potential varies by influence of such machines on the servomotor side as welder.	Check if the machine is correctly grounded.	Ground the machine separately from PG side FG.
	SERVOPACK pulse counting error due to noise interference	Check if the signal line from the encoder receives influence from noise interference.	Take measures against noise for encoder wiring.
	Excessive vibration and shock to the encoder	Vibration from machine occurred or servomotor mounting such as mounting surface precision, fixing, and alignment is incorrect.	Reduce vibration from machine or mount securely the servomotor.
	Encoder fault	An encoder fault occurred. (no change in pulse count)	Replace the servomotor.
	SERVOPACK fault	Check the multiturn data from SERVOPACK.	Replace the SERVOPACK.
	Host controller multiturn data reading error	Check the error detection at the host controller.	Correct the error detection section of host controller.
Check if the host controller executes data parity check.		Execute the multiturn data parity check.	
Check noise on the signal line between SERVOPACK and the host controller.		Noise influence at no parity check (as the above.)	

Table 11.5 Troubleshooting for Malfunction without Alarm Display (Cont'd)

Symptom	Cause	Inspection	Corrective Actions
		■: Turn OFF the servo system before executing operations.	
Overtravel (OT) (Movement over the zone specified by the host controller)	An overtravel signal is output (P-OT (CN1-42) or N-OT (CN1-43)) is at H.	Check if the voltage of input signal external power supply (+24 V) is correct.	Connect to the external +24 V power supply.
		Check if the overtravel limit switch (SW) operates properly.	Correct the overtravel limit SW.
		Check if the overtravel limit switch (SW) is connected correctly.	Correct the overtravel limit SW wiring.
	The overtravel signal does not operate normally (P-OT or N-OT signal sometimes changes).	Check the fluctuation of the input signal external power supply (+24 V) voltage.	Stabilize the external +24 V power supply voltage.
		Check if the overtravel limit switch (SW) activate correctly.	Adjust the overtravel limit SW so that it operates correctly.
		Check if the overtravel limit switch wiring is correct. (check for damaged cables or loosen screws.)	Correct the overtravel limit SW wiring.
	Incorrect P-OT/N-OT signal selection	Check the P-OT signal selection (Pn50A.3).	Correct the setting of P-OT signal selection (Pn50A.3).
		Check the N-OT signal selection (Pn50B.0).	Correct the setting of N-OT signal selection (Pn50B.0).
	Incorrect servomotor stop method selection	Check if "coast to stop" in servo OFF status is selected.	Check Pn001.0 and Pn001.1.
		Check if "coast to stop" in torque control mode is selected.	Check Pn001.0 and Pn001.1.
	Improper overtravel position setting	The distance to the position of OT (overtravel) is too short considering the coasting distance.	Correct the OT position.
	Noise interference due to improper encoder cable specifications	The encoder cable specifications must be: Twisted-pair or twisted-pair shielded wire with core 0.12 mm ² min. and tinned annealed copper twisted wire.	Use encoder cable with the specified specifications.
	Noise interference because the encoder cable distance is too long.	The wiring distance must be 20 m max.	The encoder cable distance must be within the specified range.
	Noise influence due to damaged encoder cable	Check if the encoder cable is bent or its sheath is damaged.	Correct the encoder cable layout.
	Excessive noise interference to encoder cable	Check if the encoder cable is bundled with a high-current line or near high-current line.	Change the encoder cable layout so that no surge is applied.
	FG electrical potential varies by influence of such machines on the servomotor side as welders.	Check if the machine is correctly grounded.	Ground the machine separately from PG side FG.
SERVOPACK pulse count error due to noise	Check if the signal line from the encoder is influenced by noise.	Take a measure against noise for the encoder wiring.	
Excessive vibration and shock to the encoder	Machine vibration occurred or servomotor mounting such as mounting surface precision, fixing, alignment is incorrect.	Reduce the machine vibration or mount the servomotor securely.	
Encoder fault	An encoder fault occurred.	Replace the servomotor.	
SERVOPACK fault	A SERVOPACK fault occurred.	Replace the SERVOPACK.	
Position error (without alarm)	Unsecured coupling between machine and servomotor	Check if a position error occurs at the coupling between machine and servomotor.	Secure the coupling between the machine and servomotor.
	Noise interference due to improper input signal cable specifications	The input signal cable specifications must be: Twisted-pair or twisted-pair shielded wire with core 0.12 mm ² min. and tinned annealed copper twisted wire.	Use input signal cable with the specified specifications.
	Noise interference because the input signal cable distance is too long.	The wiring distance must be 3 m max. and the impedance several hundreds ohm max.	The input signal cable distance must be within the specified range.
	Encoder fault (pulse count does not change)	An encoder fault occurred. (pulse count does not change)	Replace the servomotor.
Servomotor Overheated	Surrounding air temperature too high	Measure servomotor surrounding air temperature.	Reduce surrounding air temperature to 40°C max.
	Servomotor surface dirty	Check visually.	Clean dust and oil from servomotor surface.
	Overloaded	Run under no load.	Reconsider load and operation conditions or replace with larger capacity servomotor.