
Troubleshooting

8.1 Alarm Displays	8-2
8.1.1 List of Alarms	8-2
8.1.2 Troubleshooting of Alarms	8-6
8.2 Warning Displays	8-22
8.2.1 List of Warnings	8-22
8.2.2 Troubleshooting of Warnings	8-23
8.3 Monitoring Communication Data on Occurrence of an Alarm or Warning	8-27
8.4 Troubleshooting Malfunction Based on Operation and Conditions of the Servomotor	8-28

8.1 Alarm Displays

The following sections describe troubleshooting in response to alarm displays.

The alarm name, alarm meaning, alarm stopping method, and alarm reset capability are listed in order of the alarm numbers in *8.1.1 List of Alarms*.

The causes of alarms and troubleshooting methods are provided in *8.1.2 Troubleshooting of Alarms*.

8.1.1 List of Alarms

This section provides list of alarms.

■ Servomotor Stopping Method

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

Gr.1: The servomotor is stopped according to the setting in Pn001.0 if an alarm occurs. Pn001.0 is factory-set to stop the servomotor by applying the DB.

Gr.2: The servomotor is stopped according to the setting in Pn00B.1 if an alarm occurs. Pn00B.1 is factory-set to stop the servomotor by setting the speed reference to "0." The servomotor under force control will always use the Gr.1 method to stop. By setting Pn00B.1 to 1, the servomotor stops using the same method as Gr.1. When coordinating a number of servomotors, use this stopping method to prevent machine damage that may result due to differences in the stop method.

■ Alarm Reset

Available: Removing the cause of alarm and then executing the alarm reset can clear the alarm.

N/A: Executing the alarm reset cannot clear the alarm.

Alarm Number	Alarm Name	Meaning	Servo-motor Stopping Method	Alarm Reset
A.020	Parameter Checksum Error 1	The data of the parameter in the SERVOPACK is incorrect.	Gr.1	N/A
A.021	Parameter Format Error 1	The data of the parameter in the SERVOPACK is incorrect.	Gr.1	N/A
A.022	System Checksum Error 1	The data of the parameter in the SERVOPACK is incorrect.	Gr.1	N/A
A.030	Main Circuit Detector Error	Detection data for main circuit is incorrect.	Gr.1	Available
A.040	Parameter Setting Error 1	The parameter setting is outside the setting range.	Gr.1	N/A
A.041	Encoder Output Pulse Setting Error	The encoder output resolution (Pn281) is outside the setting range or does not satisfy the setting conditions.	Gr.1	N/A
A.042	Parameter Combination Error	Combination of some parameters exceeds the setting range.	Gr.1	N/A
A.04A	Parameter Setting Error 2	Bank member/bank data setting is incorrect.	Gr.1	N/A
A.050	Combination Error	The SERVOPACK and the servomotor capacities do not match each other.	Gr.1	Available
A.051	Unsupported Device Alarm	The device unsupported was connected.	Gr.1	N/A
A.080	Linear Scale Pitch Setting Error	The setting of the linear scale pitch (Pn282) has not been changed from the default setting.	Gr.1	N/A
A.0b0	Cancelled Servo ON Command Alarm	The servo ON command (SV_ON) was sent from the host controller after executing a utility function that turns ON servomotor.	Gr.1	Available
A.100	Overcurrent or Heat Sink Overheated	An overcurrent flowed through the IGBT or the heat sink of the SERVOPACK was overheated.	Gr.1	N/A
A.300	Regeneration Error	Regenerative circuit or regenerative resistor is faulty.	Gr.1	Available

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Alarm Number	Alarm Name	Meaning	Servo-motor Stopping Method	Alarm Reset
A.320	Regenerative Overload	Regenerative energy exceeds regenerative resistor capacity.	Gr.2	Available
A.330	Main Circuit Power Supply Wiring Error	<ul style="list-style-type: none"> Setting of AC input/DC input is incorrect. Power supply wiring is incorrect. 	Gr.1	Available
A.400	Overvoltage	Main circuit DC voltage is excessively high.	Gr.1	Available
A.410	Undervoltage	Main circuit DC voltage is excessively low.	Gr.2	Available
A.450	Main-Circuit Capacitor Overvoltage	The capacitor of the main circuit has deteriorated or is faulty.	Gr.1	N/A
A.510	Overspeed	The servomotor speed is above the maximum speed.	Gr.1	Available
A.511	Overspeed of Encoder Output Pulse Rate	The motor speed upper limit of the set encoder output resolution (Pn281) is exceeded.	Gr.1	Available
A.520	Vibration Alarm	Incorrect vibration at the motor speed was detected.	Gr.1	Available
A.521	Autotuning Alarm	Vibration was detected while performing tuning-less function.	Gr.1	Available
A.550	Maximum Speed Setting Error	The Pn385 setting is greater than the maximum speed.	Gr.1	Available
A.710	Overload: High Load	The servomotor was operating for several seconds to several tens of seconds under a force largely exceeding ratings.	Gr.2	Available
A.720	Overload: Low Load	The servomotor was operating continuously under a force exceeding ratings.	Gr.1	Available
A.730 A.731	Dynamic Brake Overload	When the dynamic brake was applied, moving energy exceeded the capacity of dynamic brake resistor.	Gr.1	Available
A.740	Overload of Surge Current Limit Resistor	The main circuit power was frequently turned ON and OFF.	Gr.1	Available
A.7A0	Heat Sink Overheated	The heat sink of the SERVOPACK exceeded 100°C.	Gr.2	Available
A.7AB	Built-in Fan in SERVOPACK Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Available
A.820	Encoder Checksum Error	The checksum results of linear scale memory is incorrect.	Gr.1	N/A
A.840	Encoder Data Error	Data in the linear scale is incorrect.	Gr.1	N/A
A.850	Encoder Overspeed	The linear scale was moving at high speed when the power was turned ON.	Gr.1	N/A
A.860	Encoder Overheated	The internal temperature of linear scale is too high.	Gr.1	N/A
A.890	Encoder Scale Error	A linear scale fault occurred	Gr.1	N/A
A.891	Encoder Module Error	Linear scale is faulty.	Gr.1	N/A
A.A□□ *1	SERVOPACK: Command Option Module Alarms	–	–	–
A.b31	Current Detection Error 1	The current detection circuit for phase U is faulty.	Gr.1	N/A
A.b32	Current Detection Error 2	The current detection circuit for phase V is faulty.	Gr.1	N/A
A.b33	Current Detection Error 3	The detection circuit for the current is faulty.	Gr.1	N/A
A.b6A	MECHATROLINK Communications ASIC Error 1	ASIC error occurred in the MECHATROLINK communications.	Gr.1	N/A
A.b6b	MECHATROLINK Communications ASIC Error 2	ASIC error occurred in the MECHATROLINK communications.	Gr.2	N/A

*1. These alarms occur in SERVOPACKs with command option modules.
For details, refer to the manual for the command option module that is connected.

(cont'd)

Alarm Number	Alarm Name	Meaning	Servo-motor Stopping Method	Alarm Reset
A.bF0	System Alarm 0	"Internal program error 0" of the SERVOPACK occurred.	Gr.1	N/A
A.bF1	System Alarm 1	"Internal program error 1" of the SERVOPACK occurred.	Gr.1	N/A
A.bF2	System Alarm 2	"Internal program error 2" of the SERVOPACK occurred.	Gr.1	N/A
A.bF3	System Alarm 3	"Internal program error 3" of the SERVOPACK occurred.	Gr.1	N/A
A.bF4	System Alarm 4	"Internal program error 4" of the SERVOPACK occurred.	Gr.1	N/A
A.C10	Servo Overrun Detected	The servomotor ran out of control.	Gr.1	Available
A.C20	Phase Detection Error	The detection of the phase is incorrect.	Gr.1	N/A
A.C21	Hall Sensor Error	The hall sensor is faulty.	Gr.1	N/A
A.C22	Phase Information Dis-agreement	The phase information does not match.	Gr.1	N/A
A.C50	Polarity Detection Error	The polarity detection failed.	Gr.1	N/A
A.C51	Overtravel Detection at Polarity Detection	The overtravel signal was detected at polarity detection.	Gr.1	Available
A.C52	Polarity Detection Uncompleted	The servomotor was turned ON under the condition of polarity detection uncompleted.	Gr.1	Available
A.C53	Out of Range for Polarity Detection	The moving distance exceeded the set value of Pn48E during polarity detection.	Gr.1	N/A
A.C54	Polarity Detection Error 2	The polarity detection failed.	Gr.1	N/A
A.C80	Absolute Encoder Clear Error	The data for the absolute linear scale was not properly cleared or set.	Gr.1	N/A
A.C90	Encoder Communications Error	Communications between the SERVOPACK and the linear scale is not possible.	Gr.1	N/A
A.C91	Encoder Communications Position Data Error	A linear scale position data calculation error occurred.	Gr.1	N/A
A.C92	Encoder Communications Timer Error	An error occurs in the communications timer between the linear scale and the SERVOPACK.	Gr.1	N/A
A.CA0	Encoder Parameter Error	Linear scale parameters are faulty.	Gr.1	N/A
A.Cb0	Encoder Echoback Error	Contents of communications with linear scale are incorrect.	Gr.1	N/A
A.d00	Position Error Overflow	Position error exceeded the value of excessive position error alarm level (Pn520) when the servomotor power is ON.	Gr.1	Available
A.d01	Position Error Overflow Alarm at Servo ON	This alarm occurs if the servomotor power is turned ON when the position error is greater than the set value of Pn526 while the servomotor power is OFF.	Gr.1	Available
A.d02	Position Error Overflow Alarm by Speed Limit at Servo ON	When the position errors remain in the error counter, Pn584 limits the speed if the servomotor power is turned ON. If Pn584 limits the speed in such a state, this alarm occurs when position references are input and the number of position errors exceeds the value set for the excessive position error alarm level (Pn520).	Gr.2	Available
A.d30	Position Data Overflow	The position feedback data exceeded ± 1879048192 .	Gr.1	N/A
A.E02	MECHATROLINK Internal Synchronization Error 1	Synchronization error during MECHATROLINK communications with the SERVOPACK.	Gr.1	Available

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Alarm Number	Alarm Name	Meaning	Servo-motor Stopping Method	Alarm Reset
A.E40	MECHATROLINK Transmission Cycle Setting Error	The setting of the MECHATROLINK transmission cycle is out of the allowable range.	Gr.2	Available
A.E50	MECHATROLINK Synchronization Error	A synchronization error occurs during MECHATROLINK communications.	Gr.2	Available
A.E51	MECHATROLINK Synchronization Failed	A synchronization failure occurs in MECHATROLINK communications.	Gr.2	Available
A.E60	MECHATROLINK Communications Error (Reception error)	A communications error occurs continuously during MECHATROLINK communications.	Gr.2	Available
A.E61	MECHATROLINK Transmission Cycle Error (Synchronization interval error)	The transmission cycle fluctuates during MECHATROLINK communications.	Gr.2	Available
A.E71	Safety Option Module Detection Failure	Detection of the safety option module failed.	Gr.1	N/A
A.E74	Unsupported Safety Option Module	An unsupported safety option module was connected.	Gr.1	N/A
A.E75	Unsupported Feedback Option Module	An unsupported feedback option module was connected.	Gr.1	N/A
A.E81*2	SERVOPACK: Safety Module Alarm	–	–	–
A.EA2	DRV Alarm 2 (SERVOPACK WDC error)	A SERVOPACK DRV alarm 0 occurs.	Gr.2	Available
A.Eb1	Safety Function Signal Input Timing Error	The safety function signal input timing is faulty.	Gr.1	N/A
A.Eb□*2	SERVOPACK: Safety Module Alarms	–	–	–
A.EC□*2	SERVOPACK: Safety Module Alarms	–	–	–
A.Ed1	Command Execution Timeout	A timeout error occurred when using a MECHATROLINK command.	Gr.2	Available
A.F10	Main Circuit Cable Open Phase	With the main power supply ON, voltage was low for more than 1 second in phase R, S, or T.	Gr.2	Available
FL-1*3	System Alarm	Internal program error occurred in the SERVOPACK	–	N/A
FL-2*3			–	N/A
CPF00	Digital Operator Transmission Error 1	Digital operator (JUSP-OP05A-1-E) fails to communicate with the SERVOPACK (e.g., CPU error).	–	N/A
CPF01	Digital Operator Transmission Error 2		–	N/A
A.--	Not an error	Normal operation status	–	–

*2. These alarms occur in SERVOPACKs with safety modules.

For details, refer to *Σ-V Series User's Manual, Safety Module* (No.: SIEP C720829 06).

*3. These alarms are not stored in the alarm history and are displayed only in the panel display.

8.1.2 Troubleshooting of Alarms

If an error occurs in servo drives, an alarm display such as A.□□□ and CPF□□ will appear on the panel display.

Refer to the following table 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.

Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.020: Parameter Checksum Error 1 (The parameter data in the SERVOPACK is incorrect.)	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and set Fn005 to initialize the parameter.
	The power supply went OFF while changing a parameter setting.	Check the circumstances when the power supply went OFF.	Set Fn005 to initialize the parameter and then set the parameter again.
	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed through the host controller.	The SERVOPACK may be faulty. Replace the SERVOPACK. Reconsider the method of writing parameters.
	Malfunction caused by noise from the AC power supply or grounding line, static electricity noise, etc.	Turn the power supply ON and OFF several times. If the alarm still occurs, there may be noise interference.	Take countermeasures against noise.
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SERVOPACK.
	A SERVOPACK fault occurred.	Turn the power supply ON and OFF several times. If the alarm still occurs, the SERVOPACK may be faulty.	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.021: Parameter Format Error 1 (The parameter data in the SERVOPACK is incorrect.)	The software version of SERVOPACK that caused the alarm is older than that of the written parameter.	Check Fn012 to see if the set software version agrees with that of the SERVOPACK. If not, an alarm may occur.	Write the parameter of another SERVOPACK of the same model with the same software version. Then turn the power OFF and then ON again.
	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.022: System Checksum Error 1 (The parameter data in the SERVOPACK is incorrect.)	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SERVOPACK.
	The power supply went OFF while setting an utility function.	Check the circumstances when the power supply went OFF.	The SERVOPACK may be faulty. Replace the SERVOPACK.
	A SERVOPACK fault occurred.	Turn the power supply ON and OFF several times. If the alarm still occurs, the SERVOPACK may be faulty.	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.030: Main Circuit Detector Error	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.040: Parameter Setting Error 1 (The parameter setting was out of the setting range.)	The SERVOPACK and servomotor capacities do not match each other.	Check the combination of SERVOPACK and servomotor capacities.	Select the proper combination of SERVOPACK and servomotor capacities.
	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.
	The parameter setting is out of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameter to a value within the setting range.
	The electronic gear ratio is out of the setting range.	Check the electronic gear ratio. The ratio must satisfy: $0.001 < (Pn20E/Pn210) < 4000$.	Set the electronic gear ratio in the range: $0.001 < (Pn20E/Pn210) < 4000$.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.041: Encoder Output Pulse Setting Error	The encoder output resolution (Pn281) is out of the setting range and does not satisfy the setting conditions.	Check the parameter Pn281.	Set Pn281 to a correct value.
A.042:*1 Parameter Combination Error	The speed of program JOG operation (Fn004) is lower than the setting range after having changed the electronic gear ratio (Pn20E/Pn210) or the servomotor.	Check if the detection conditions are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).
	The speed of program JOG operation (Fn004) is lower than the setting range after having changed the setting of the program JOG movement speed (Pn585).	Check if the detection conditions are satisfied.	Increase the setting of the program JOG movement speed (Pn585).
	The moving speed of advanced autotuning is lower than the setting range after having changed the electronic gear ratio (Pn20E/Pn210) or the servomotor.	Check if the detection conditions are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).
A.04A: Parameter Setting Error 2	For a 4-byte parameter bank, no registration in two consecutive bytes for two bank members.	—	Change the number of bytes for bank members to an appropriate value.
	The total amount of bank data exceeds 64. (Pn900 × Pn901 > 64)	—	Reduce the total amount of bank data to 64 or less.
A.050: Combination Error (The SERVOPACK and servomotor capacities do not correspond.)	The SERVOPACK and servomotor capacities do not match each other.	Check the capacities to see if they satisfy the following condition: $\frac{1}{4} \leq \frac{\text{Servomotor capacity}}{\text{SERVOPACK capacity}} \leq 4$	Select the proper combination of SERVOPACK and servomotor capacities.
	A linear scale fault occurred.	Replace the linear scale and see if the alarm occurs again.	Replace the linear scale.
	A SERVOPACK fault occurred.	—	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.051: Unsupported Device Alarm	The parameters of the motor parameter file are not written in the linear scale. (Only when not using serial converter units)	Check if the parameters of the motor parameter file are written in the linear scale.	Write the parameters of the motor parameter file in the linear scale.
	An unsupported serial converter unit or linear scale is connected to the SERVOPACK.	Check the product specifications, and select the correct model.	Select the correct combination of units.
A.080: Linear Scale Pitch Setting Error	The setting of the linear scale pitch (Pn282) has not been changed from the default setting.	Check the value of Pn282.	Correct the value of Pn282.
A.0b0: Cancelled Servo ON Command Alarm	After executing the utility function to turn ON the power to the motor, the servo ON command (SV_ON) was sent from the host controller.	—	Turn the SERVOPACK power supply OFF and then ON again or execute a software reset.

*1. Detection conditions

If one of the following conditions is detected, an alarm occurs.

- $\frac{\text{Pn585}[\text{mm/s}]}{\text{Linear scale pitch}[\mu\text{m}]} \times \frac{\text{Number of divisions of serial converter unit}}{10} \leq \frac{\text{Pn20E}}{\text{Pn210}}$
- $\frac{\text{Pn385} [100 \text{ mm/s}]}{\text{Linear scale pitch} [\mu\text{m}]} \times \frac{\text{Number of divisions of serial converter unit}}{\text{About } 6.10 \times 10^5} \geq \frac{\text{Pn20E}}{\text{Pn210}}$

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.100: Overcurrent or Heat Sink Overheated (An overcurrent flowed through the IGBT or heat sink of SERVOPACK overheated.)	Incorrect wiring or contact fault of main circuit cables.	Check the wiring. Refer to <i>3.1 Main Circuit Wiring</i> .	Correct the wiring.
	Short-circuit or ground fault of main circuit cables.	Check for short-circuits across the servomotor terminal phases U, V, and W, or between the grounding and servomotor terminal phases U, V, or W. Refer to <i>3.1 Main Circuit Wiring</i> .	The cable may be short-circuited. Replace the cable.
	Short-circuit or ground fault inside the servomotor.	Check for short-circuits across the servomotor terminal phases U, V, and W, or between the grounding and servomotor terminal phases U, V, or W. Refer to <i>3.1 Main Circuit Wiring</i> .	The servomotor may be faulty. Replace the servomotor.
	Short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the servomotor connection terminals U, V, and W on the SERVOPACK, or between the grounding and terminal U, V, or W. Refer to <i>3.1 Main Circuit Wiring</i> .	The SERVOPACK may be faulty. Replace the SERVOPACK.
	Incorrect wiring or contact fault of the regenerative resistor.	Check the wiring. Refer to <i>3.7 Connecting Regenerative Resistors</i> .	Correct the wiring.
	The dynamic brake (DB: Emergency stop executed from the SERVOPACK) was frequently activated, or the DB overload alarm occurred.	Check the power consumed by DB resistance (Un00B) to see how many times the DB has been used. Or, check the alarm history display Fn000 to see if the DB overload alarm A.730 or A.731 was reported.	Change the SERVOPACK model, operating conditions, or the mechanism so that the DB does not need to be used so frequently.
	The generated regenerative resistor value exceeded the SERVOPACK regenerative energy processing capacity.	Check the regenerative load ratio (Un00A) to see how many times the regenerative resistor has been used.	Check the operating condition including overload, and reconsider the regenerative resistor value.
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio (Un00A) to see how many times the regenerative resistor has been used.	Change the regenerative resistance value to a value larger than the SERVOPACK minimum allowable resistance value.
	A heavy load was applied while the servomotor was stopped or running at a low speed.	Check to see if the operating conditions are outside servo drive specifications.	Reduce the load applied to the servomotor or increase the operating speed.
	Malfunction caused by noise interference.	Improve the wiring or installation environment, such as by reducing noise, and check to see if the alarm recurs.	Take countermeasures for noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVOPACK main circuit wire size.
A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.300: Regeneration Error	<ul style="list-style-type: none"> Regenerative resistor capacity (Pn600) is set to a value other than 0 for a SGDVR70, -R90, -1R6, -2R1, or -2R8 SERVOPACK, and an external regenerative resistor is not connected. An external regenerative resistor is not connected to the SGDVR550 or SGDVR260 SERVOPACK. 	Check the external regenerative resistor connection and the value of the Pn600.	Connect the external regenerative resistor, or set Pn600 to 0 if no regenerative resistor is required.
	The jumper between the power supply terminals B2 and B3 is removed for the SERVOPACKs other than the SERVOPACKs shown above.	Confirm that a jumper is mounted between the power supply terminals B2 and B3.	Correctly mount a jumper.
	The external regenerative resistor is incorrectly wired, or is removed or disconnected.	Check the external regenerative resistor connection.	Correctly connect the external regenerative resistor.
	A SERVOPACK fault occurred.	–	While the main circuit power supply is OFF, turn the control power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.320: Regenerative Overload	The power supply voltage exceeds the specified limit.	Measure the power supply voltage.	Set the power supply voltage within the specified range.
	Insufficient external regenerative resistance, regenerative resistor capacity, or SERVOPACK capacity. Or, regenerative power has been continuously flowing back.	Check the operating condition or the capacity using the capacity selection Software SigmaJunmaSize+, etc.	Change the regenerative resistance, regenerative resistor capacity, or SERVOPACK capacity. Reconsider the operating conditions using the capacity selection software SigmaJunmaSize+, etc.
	Regenerative power continuously flowed back because negative load was continuously applied.	Check the load applied to the servomotor during operation.	Reconsider the system including servo, machine, and operating conditions.
	The setting of parameter Pn600 is smaller than the external regenerative resistor's capacity.	Check the external regenerative resistor connection and the value of the Pn600.	Set the Pn600 to a correct value.
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an external regenerative resistor of appropriate capacity.
	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.330: Main Circuit Power Supply Wiring Error (Detected when the power to the main circuit is turned ON.)	The regenerative resistor disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	When using a regenerative resistor built in the SERVOPACK: Replace the SERVOPACK. When using an external regenerative resistor: Replace the external regenerative resistor.
	In the AC power input mode, DC power was supplied.	Check the power supply to see if it is a DC power supply.	Correct the settings to match the actual power supply specifications.
	In the DC power input mode, AC power was supplied.	Check the power supply to see if it is an AC power supply.	Correct the settings to match the actual power supply specifications.
	Regenerative resistor capacity (Pn600) is set to a value other than 0 for a SGDVR70, -R90, -1R6, -2R1, or -2R8 SERVOPACK, and an external regenerative resistor is not connected.	Check the external regenerative resistor connection and the value of the Pn600.	Connect the external regenerative resistor, or set Pn600 to 0 if no regenerative resistor is required.
	The jumper between the power supply terminals B2 and B3 is removed for the SERVOPACKs other than the SERVOPACKs shown above.	Confirm that a jumper is mounted between the power supply terminals B2 and B3.	Correctly mount a jumper.
	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.400: Overvoltage (Detected in the SERVOPACK main circuit power supply section.)	<ul style="list-style-type: none"> For 100-VAC SERVOPACKs: The AC power supply voltage exceeded 145 V. For 200-VAC SERVOPACKs: The AC power supply voltage exceeded 290 V. For 400-VAC SERVOPACKs: The AC power supply voltage exceeded 580 V. For 200-VAC SERVOPACKs: with DC power supply input: The DC power supply voltage exceeded 410 V. For 400-VAC SERVOPACKs: The DC power supply voltage exceeded 820 V. 	Measure the power supply voltage.	Set AC/DC power supply voltage within the specified range.
	The power supply is unstable, or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions by installing a surge absorber, etc. Then, turn the power supply OFF and ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
	Voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and force during operation.	Set AC power supply voltage within the specified range.
	The external regenerative resistance is too high for the actual operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value appropriate for the operating conditions and load.
	The mass ratio exceeded the allowable value.	Confirm that the mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.
	A SERVOPACK fault occurred.	–	Turn the control power OFF and then ON again while the main circuit power supply is OFF. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.410: Undervoltage (Detected in the SERVOPACK main circuit power supply section.)	<ul style="list-style-type: none"> For 100-VAC SERVOPACKs: The AC power supply voltage is 49 V or less. For 200-VAC SERVOPACKs: The AC power supply voltage is 120 V or less. For 400-VAC SERVOPACKs: The AC power supply voltage is 240 V or less. 	Measure the power supply voltage.	Set the power supply voltage within the specified range.
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.
	Occurrence of instantaneous power interruption.	Measure the power supply voltage.	When the instantaneous power cut hold time (Pn509) is set, decrease the setting.
	The SERVOPACK fuse is blown out.	—	Replace the SERVOPACK, connect a reactor, and run the SERVOPACK.
	A SERVOPACK fault occurred.	—	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.450: Main-Circuit Capacitor Overvoltage	A SERVOPACK fault occurred.	—	Replace the SERVOPACK.
A.510: Overspeed (The servomotor speed exceeds the maximum.)	The order of phases U, V, and W in the servomotor wiring is incorrect.	Check the motor wiring.	Confirm that the servomotor is correctly wired.
	A reference value exceeding the overspeed detection level was input.	Check the input value.	Reduce the reference value or adjust the gain.
	The motor speed exceeded the maximum.	Check the motor speed waveform.	Reduce the speed reference input gain, adjust the servo gain, or reconsider the operating conditions.
	A SERVOPACK fault occurred.	—	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.511: Overspeed of Encoder Output Pulse Rate	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of the encoder output resolution (Pn281).
	The encoder output pulse output frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse output setting and motor speed.	Decrease the motor speed.
A.520: Vibration Alarm	Abnormal vibration was detected at the motor speed.	Check for abnormal noise from the servomotor, and check the speed and force waveforms during operation.	Reduce the motor speed or reduce the speed loop gain (Pn100).
	The mass ratio (Pn103) value is greater than the actual value or is greatly changed.	Check the mass ratio.	Set the mass ratio (Pn103) to an appropriate value.
A.521: Autotuning Alarm (Vibration was detected while executing the one-parameter tuning, EasyFFT, or tuning-less function.)	The servomotor vibrated considerably while performing tuning-less function.	Check the motor speed waveform.	Reduce the load so that the mass ratio falls within the allowable value, or raise the load level using the tuning-less levels setting (Fn200) or reduce the rigidity level.
	The servomotor vibrated considerably during one-parameter tuning or EasyFFT.	Check the motor speed waveform.	Check the operation procedure of corresponding function and take a corrective action.

(cont'd)

Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.550: Maximum Speed Setting Error	The Pn385 setting is greater than the maximum speed.	Check the value of Pn385 and Un010 (Monitor for allowable motor maximum speed and encoder output resolution).	Set Pn385 to a value equal to or lower than the motor maximum speed.
A.710: A.720: Overload A.710: High Load A.720: Low Load	Incorrect wiring or contact fault of servomotor and linear scale.	Check the wiring.	Confirm that the servomotor and linear scale are correctly wired.
	Operation beyond the overload protection characteristics.	Check the servomotor overload characteristics and executed run command.	Reconsider the load conditions and operating conditions. Or, increase the motor capacity.
	Excessive load was applied during operation because the servomotor was not driven due to mechanical problems.	Check the executed operation reference and motor speed.	Remove the mechanical problems.
	The setting of the linear scale pitch (Pn282) is incorrect.	Check the setting of Pn282.	Correct the setting of Pn282.
	The setting of the motor phase selection (Pn080.1) is incorrect.	Check the setting of Pn080.1.	Correct the setting of Pn080.1.
	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.730: A.731: Dynamic Brake Overload (An excessive power consumption of dynamic brake was detected.)	The servomotor moves because of external force.	Check the operation status.	Take measures to ensure the servomotor will not move because of external force.
	The moving energy at a DB stop exceeds the DB resistance capacity.	Check the power consumed by DB resistance (Un00B) to see how many times the DB has been used.	Reconsider the following: <ul style="list-style-type: none"> • Reduce the motor reference speed. • Reduce the mass ratio. • Reduce the number of times of the DB stop operation.
	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.740: Overload of Surge Current Limit Resistor (The main circuit power is turned ON/OFF too frequently.)	The inrush current limit resistor operation frequency at the main circuit power supply ON/OFF operation exceeds the allowable range.	–	Reduce the frequency of turning the main circuit power supply ON/OFF.
	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.7A0: Heat Sink Overheated (Detected when the heat sink temperature exceeds 100°C.)	The surrounding air temperature is too high.	Check the surrounding air temperature using a thermostat.	Decrease the surrounding air temperature by improving the SERVOPACK installation conditions.
	The overload alarm has been reset by turning OFF the power too many times.	Check the alarm history display (Fn000) to see if the overload alarm was reported.	Change the method for resetting the alarm.
	Excessive load or operation beyond the regenerative energy processing capacity.	Check the accumulated load ratio (Un009) to see the load during operation, and the regenerative load ratio (Un00A) to see the regenerative energy processing capacity.	Reconsider the load and operating conditions.
	Incorrect SERVOPACK installation orientation or/and insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK correctly as specified.
	A SERVOPACK fault occurred.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.

(cont'd)

Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.7AB: Built-in Fan in SERVOPACK Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter or debris inside the SERVOPACK.	Remove foreign matter or debris from the SERVOPACK. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.820: Encoder Checksum Error (Detected on the linear scale side.)	A linear scale fault occurred.	—	The linear scale may be faulty. Replace the linear scale.
	A SERVOPACK fault occurred.	—	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.840: Encoder Data Error (Detected on the linear scale side.)	A linear scale malfunctioned.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the linear scale may be faulty. Replace the linear scale.
	Misreading of the linear scale occurred.	—	Reinstall the linear scale, so the tolerance is within the allowable range.
	The speed of the linear scale exceeded the allowable range.	—	Set the motor speed within the range specified by the linear scale manufacturer and restart the control power supply.
	Malfunction of linear scale because of noise interference, etc.	—	Correct the wiring around the linear scale by separating the linear scale connection cable from the servomotor main circuit cable or by checking the grounding and other wiring.
	The hall sensor wiring is incorrect.	Check the hall sensor wiring.	Correct the hall sensor wiring.
	A hall sensor fault occurred.	—	Replace the hall sensor.
A.850: Encoder Overspeed (Detected when the control power supply was turned ON.) (Detected on the linear scale side.)	The servomotor speed is higher than the specified speed when the control power supply was turned ON.	Check the motor moving speed (Un000) to confirm the servomotor speed when the power is turned ON.	Set the motor speed within the range specified by the linear scale manufacturer and restart the control power supply.
	A linear scale fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the linear scale may be faulty. Replace the linear scale.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.860: Encoder Overheated (Only when an absolute linear scale is connected.) (Detected on the linear scale side.)	The ambient operating temperature around the servomotor is too high.	Measure the ambient operating temperature around the servomotor.	The ambient operating temperature must be 40°C or less.
	The motor load is greater than the rated load.	Check the accumulated load ratio (Un009) to see the load.	The motor load must be within the specified range.
	A linear scale fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the linear scale may be faulty. Replace the linear scale.
A.890: Encoder Scale Error	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
	A linear scale fault occurred.	—	The linear scale may be faulty. Replace the linear scale.
A.891: Encoder Module Error	A linear scale fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the linear scale may be faulty. Replace the linear scale.

(cont'd)

Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.b31: Current Detection Error 1	The current detection circuit for phase U is faulty.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.b32: Current Detection Error 2	The current detection circuit for phase V is faulty.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.b33: Current Detection Error 3	The detection circuit for the current is faulty.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
	The servomotor main circuit cable is disconnected.	Check for disconnection of the servomotor main circuit cable.	Correct the servomotor wiring.
A.b6A: MECHATROLINK Communications ASIC Error 1	SERVOPACK MECHATROLINK communication section fault.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.b6b: MECHATROLINK Communications ASIC Error 2	MECHATROLINK data reception error occurred due to noise interference.	–	Take measures against noise. Check the MECHATROLINK communications cable and FG wiring and take measures such as adding ferrite core on the MECHATROLINK communications cable.
	SERVOPACK MECHATROLINK communication section fault.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.bF0: System Alarm 0	A SERVOPACK fault occurred.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.bF1: System Alarm 1	A SERVOPACK fault occurred.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.bF2: System Alarm 2	A SERVOPACK fault occurred.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.bF3: System Alarm 3	A SERVOPACK fault occurred.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.bF4: System Alarm 4	A SERVOPACK fault occurred.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.C10: Servo Overrun Detected (Detected when the servomotor power is ON.)	The order of phases U, V, and W in the servomotor wiring is incorrect.	Check the motor wiring.	Confirm that the servomotor is correctly wired.
	The setting of the motor phase selection (Pn080.1) is incorrect.	Check the setting of Pn080.1.	Correct the setting of Pn080.1.
	A linear scale fault occurred.	–	If the alarm still occurs after turning the power OFF and then ON again, even though the linear scale is correctly wired, the linear scale may be faulty. Replace the linear scale.
	A SERVOPACK fault occurred.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.C20: Phase Detection Error	The linear scale signal is weak.	Check the voltage of the linear scale signal.	Fine-adjust the installation status of the linear scale head, or replace the linear scale.
	The count-up direction of the linear scale does not match the forward direction of the motor coil assembly.	Check the setting of Pn080.1 (Motor Phase Selection). Check the installation directions for the linear scale and motor coil assembly.	Change the setting of Pn080.1 (Motor Phase Selection). Correctly reinstall the linear scale and motor coil assembly.
	The hall sensor signal is affected by noise.	–	Correct the FG wiring and take measures against noise for the hall sensor wiring.
A.C21: Hall Sensor Error	The hall sensor is protruding from the motor magnetic way.	Check the hall sensor.	Correctly reinstall the motor coil assembly or motor magnetic way.
	The setting of the linear scale pitch (Pn282) is incorrect.	Check the setting of the linear scale pitch (Pn282).	Check the specifications of the linear scale and correct the value of Pn282.
	The hall sensor wiring is incorrect.	Check the hall sensor wiring.	Correct the hall sensor wiring.
	A hall sensor fault occurred.	–	Replace the hall sensor.
A.C22: Phase Information Disagreement	The SERVOPACK phase data does not match that of the linear scale.	–	Execute polarity detection (Fn080).
A.C50: Polarity Detection Error	Parameter settings are incorrect.	Check the linear scale specifications and feedback signal status.	The settings of the linear scale pitch (Pn282) and motor phase selection (Pn080.1) may not match the actual product requirements. Set these parameters to the correct values.
	Noise interference occurred on the scale signal.	Check the wiring to see if: <ul style="list-style-type: none"> • Each FG of the serial converter unit and servomotor is connected to the FG of the SERVOPACK. • The FG of the SERVOPACK is connected to the FG of the power supply. • The linear scale connection cables are securely shielded. Check to see if the detection reference is repeatedly output in one direction.	Take measures to avoid noise interference by correctly connecting FG lines, shielding the linear scale connection cables, etc.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.C50: Polarity Detection Error (cont'd)	An external force was applied to the motor coil assembly.	—	The polarity cannot be properly detected if the detection reference is 0 (zero), but the speed feedback is not 0 (zero) because of an external force, such as cable tension, applied to the motor coil assembly. Take measures to reduce the external force so that the speed feedback becomes 0 for a 0 detection reference. If external force cannot be reduced, increase the value of the changes in the sequence input signal allocation for each signal (Pn481).
	The linear scale resolution is too low.	Check the linear scale pitch to see if it is within 100 μm .	If the linear scale pitch is 100 μm or longer, the SERVOPACK cannot detect the correct speed feedback. Use a scale pitch with higher accuracy (a pitch within 40 μm recommended.) Or, increase the value of the polarity detection reference speed (Pn485). However, note that increasing the value of Pn485 will widen the servomotor movement range required for polarity detection.
A.C51: Overtravel Detection at Polarity Detection	An overtravel signal was detected during polarity detection.	Check the position after overtravel.	Perform the wiring for an overtravel signal. Execute polarity detection at a position where an overtravel signal is not detected.
A.C52: Polarity Detection Uncompleted	The servomotor has been turned ON under the following circumstances. <ul style="list-style-type: none"> An absolute linear scale is being used. The polarity detection selection for the absolute linear scale was set to not execute. (Pn587.0 = 0) Polarity was not yet detected. 	—	When using an absolute linear scale, set the parameter Pn587.0 to 1 to execute polarity detection.
A.C53: Out of Range for Polarity Detection	The moving distance exceeded the set value of Pn48E in the middle of detection.	—	Increase the value of the polarity detection range (Pn48E). Or, increase the value of the changes in the sequence input signal allocation for each signal (Pn481).
A.C54: Polarity Detection Error 2	External force was applied to the servomotor.	—	Increase the value of the polarity detection confirmation force reference (Pn495). Increase the value of the polarity detection allowable error range (Pn498). Note that increasing the allowable error will also increase the motor temperature.
A.C80: Absolute Encoder Clear Error	A linear scale fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the linear scale may be faulty. Replace the linear scale.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.C90: Encoder Communications Error	Contact fault of connector or incorrect wiring for linear scale connection cables.	Check the connector contact status for linear scale connection cables.	Re-insert the connectors and confirm that the linear scale is correctly wired.
	Cable disconnection for linear scale connection cables or short-circuit. Or, incorrect cable impedance.	Check the linear scale connection cables.	Use the cables with the specified rating.
	Corrosion caused by improper temperature, humidity, or gas, short-circuit caused by intrusion of water drops or cutting oil, or connector contact fault caused by vibration.	Check the operating environment.	Improve the operating environmental conditions, and replace the cable. If the alarm still occurs, replace the SERVOPACK.
	Malfunction caused by noise interference.	—	Correct the wiring around the linear scale by separating the linear scale connection cables from the servomotor main circuit cable or by checking the grounding and other wiring.
	A SERVOPACK fault occurred.	—	Connect the servomotor to another SERVOPACK, and turn ON the control power. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.C91: Encoder Communications Position Data Error	Noise interference occurred on the I/O signal line because the linear scale connection cables are bent and the sheaths are damaged.	Check the linear scale connection cables and connectors.	Confirm that there is no problem with the cable layout.
	The linear scale connection cables are bundled with a high-current line or near a high-current line.	Check the cable layout for linear scale connection cables.	Confirm that there is no surge voltage on the cables.
	The FG potential varies because of influence from machines on the servomotor side, such as the welder.	Check the cable layout for linear scale connection cables.	Properly ground the machines to separate from the linear scale FG.
A.C92: Encoder Communications Timer Error	Noise interference occurred on the I/O signal line from the linear scale.	—	Take countermeasures against noise for the linear scale wiring.
	Excessive vibration and shocks were applied to the linear scale.	Check the operating environment.	Reduce the machine vibration or correctly install the linear scale.
	A linear scale fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the linear scale may be faulty. Replace the linear scale.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.CA0: Encoder Parameter Error	A linear scale fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the linear scale may be faulty. Replace the linear scale.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.Cb0: Encoder Echoback Error	The wiring and contact for linear scale connection cables are incorrect.	Check the wiring.	Correct the wiring.
	Noise interference occurred due to incorrect cable specifications of linear scale connection cables.	—	Use tinned annealed copper shielded twisted-pair or screened unshielded twisted-pair cable with a core of at least 0.12 mm ² .
	Noise interference occurred because the wiring distance for the linear scale connection cables are too long.	—	The wiring distance must be 20 m max.
	The FG potential varies because of influence from machines on the servomotor side, such as the welder.	Check the cable layout for linear scale connection cables.	Properly ground the machines to separate from linear scale FG.
	Excessive vibration and shocks were applied to the linear scale.	Check the operating environment.	Reduce the machine vibration or correctly install the linear scale.
	A linear scale fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the linear scale may be faulty. Replace the linear scale.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.d00: Position Error Overflow (Position error exceeded the value set in the excessive position error alarm level (Pn520).)	The servomotor U, V, and W wirings is faulty.	Check the servomotor main circuit cable connection.	Confirm that there is no contact fault in the motor wiring or linear scale wiring.
	The position reference speed is too high.	Reduce the reference speed, and operate the SERVOPACK.	Reduce the position reference speed or acceleration of position reference. Or, reconsider the electronic gear ratio.
	The acceleration of the position reference is too high.	Reduce the reference acceleration, and operate the SERVOPACK.	Reduce the reference acceleration of the position reference using a MECHATROLINK command, or smooth the acceleration of the position reference by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.
	Setting of the excessive position error alarm level (Pn520) is low against the operating condition.	Check the alarm level (Pn520) to see if it is set to an appropriate value.	Set the Pn520 to proper value.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.d01: Position Error Overflow Alarm at Servo ON	This alarm occurs if the servomotor power is turned ON when the position error is greater than the set value of Pn526 while the servomotor power is OFF.	Check the position error amount (Un008) while the servomotor power is OFF.	Correct the excessive position error alarm level at servo ON (Pn526).

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.d02: Position Error Overflow Alarm by Speed Limit at Servo ON	When the position errors remain in the error counter, Pn584 limits the speed if the servomotor power is ON. If Pn584 limits the speed in such a state, this alarm occurs when position references are input and the number of position errors exceeds the value set for the excessive position error alarm level (Pn520).	—	Correct the excessive position error alarm level (Pn520). Or, adjust the speed limit level at servo ON (Pn584).
A.d30: Position Data Overflow	The position data exceeded ± 1879048192 .	Check the input reference pulse counter (Un00C).	Reconsider the operating specifications.
A.E02: MECHATROLINK Internal Synchronization Error 1	MECHATROLINK transmission cycle fluctuated.	—	Remove the cause of transmission cycle fluctuation at host controller.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.E40: MECHATROLINK Transmission Cycle Setting Error	Setting of MECHATROLINK transmission cycle is out of specifications range.	Check the MECHATROLINK transmission cycle setting.	Set the transmission cycle to the proper value.
A.E50: MECHATROLINK Synchronization Error	WDT data of host controller was not updated correctly.	Check the WDT data updating for the host controller.	Update the WDT data at the host controller correctly.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.E51: MECHATROLINK Synchronization Failed	WDT data of host controller was not updated correctly at the synchronization communications start, and synchronization communications could not start.	Check the WDT data updating for the host controller.	Update the WDT data at the host controller correctly.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.E60: MECHATROLINK Communications error (Reception error)	MECHATROLINK wiring is incorrect.	Check the MECHATROLINK wirings.	Correct the MECHATROLINK wiring. Connect the terminator correctly.
	MECHATROLINK data reception error occurred due to noise interference.	—	Take measures against noise. Check the MECHATROLINK communications cable and FG wiring and take measures such as adding ferrite core on the MECHATROLINK communications cable.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.E61: MECHATROLINK Transmission Cycle Error (Synchronization interval error)	MECHATROLINK transmission cycle fluctuated.	Check the MECHATROLINK transmission cycle setting.	Remove the cause of transmission cycle fluctuation at host controller.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
A.E71: Safety Option Module Detection Failure	The connection between the SERVOPACK and the safety option module is faulty.	Check the connection between the SERVOPACK and the safety option module.	Correctly connect the safety option module.
	The safety option module was disconnected.	—	Execute Fn014 (Resetting configuration error of option module) with using the digital operator or SigmaWin+ and turn the power supply OFF and then ON again.
	A safety option module fault occurred.	—	Replace the safety option module.
	A SERVOPACK fault occurred.	—	Replace the SERVOPACK.
A.E74: Unsupported Safety Option Module	A safety option module fault occurred.	—	Replace the safety option module.
	A unsupported safety option module was connected.	Refer to the catalog of the connected safety option module.	Connect a compatible safety option module.
A.E75: Unsupported Feedback Option Module	A feedback option module fault occurred.	—	Replace the feedback option module.
	A unsupported feedback option module was connected.	Refer to the catalog of the connected feedback option module or the manual of the SERVOPACK.	Connect a compatible feedback option module.
A.EA2: DRV Alarm 2 (SERVOPACK WDT error)	MECHATROLINK transmission cycle fluctuated.	Check the MECHATROLINK transmission cycle setting.	Remove the cause of transmission cycle fluctuation at host controller.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.Eb1: Safety Function Signal Input Timing Error	The lag between activations of the input signals /HWBB1 and /HWBB2 for the HWBB function is ten second or more.	Measure the time lag between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SERVOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check if any of these items are faulty or have been disconnected.
A.Ed1: Command Execution Timeout	A timeout error occurred when using an MECHATROLINK command.	Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not running.
		Check the status of the linear scale after an output is made to execute the command.	Execute the SENS_ON command only when a linear scale is connected.
A.F10: Main Circuit Cable Open Phase (With the main power supply ON, voltage was low for more than 1 sec- ond in an R, S, or T phase.) (Detected when the main power supply was turned ON.)	The three-phase power supply wiring is incorrect.	Check the power supply wiring.	Confirm that the power supply is correctly wired.
	The three-phase power supply is unbalanced.	Measure the voltage at each phase of the three-phase power supply.	Balance the power supply by changing phases.
	A single-phase power is input without setting Pn00B.2 (power supply method for three-phase SERVOPACK) to 1 (single-phase power supply).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

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Alarm Number: Alarm Name (Alarm Description)	Cause	Investigative Actions	Corrective Actions
FL-1* ² : System Alarm	SERVOPACK failure	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
FL-2* ² : System Alarm		–	
CPF00: Digital Operator Transmission Error 1	The contact between the digital operator and the SERVOPACK is faulty.	Check the connector contact.	Insert securely the connector or replace the cable.
	Malfunction caused by noise interference.	–	Keep the digital operator or the cable away from noise sources.
CPF01: Digital Operator Transmission Error 2	A digital operator fault occurred.	–	Disconnect the digital operator and then re-connect it. If the alarm still occurs, the digital operator may be faulty. Replace the digital operator.
	A SERVOPACK fault occurred.	–	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

*2. These alarms are not stored in the alarm history and are displayed only in the panel display.

8.2 Warning Displays

The following sections describe troubleshooting in response to warning displays.

The warning name and warning meaning output are listed in order of the warning numbers in *8.2.1 List of Warnings*.

The causes of warnings and troubleshooting methods are provided in *8.2.2 Troubleshooting of Warnings*.

8.2.1 List of Warnings

This section provides list of warnings.

Warning Number	Warning Name	Meaning
A.900 ^{*1}	Position Error Overflow	Position error exceeded the parameter setting (Pn520×Pn51E/100).
A.901 ^{*1}	Position Error Overflow Alarm at Servo ON	When the servomotor power is ON, the position error exceeded the parameter setting (Pn526×Pn528/100).
A.910 ^{*1}	Overload	This warning occurs before the overload alarms (A.710 or A.720) occur. If the warning is ignored and operation continues, an overload alarm may occur.
A.911 ^{*1}	Vibration	Abnormal vibration at the motor speed was detected. The detection level is the same as A.520. Set whether to output an alarm or warning by the vibration detection switch (Pn310).
A.920 ^{*1}	Regenerative Overload	This warning occurs before the regenerative overload alarm (A.320) occurs. If the warning is ignored and operation continues, a regenerative overload alarm may occur.
A.921 ^{*1}	Dynamic Brake Overload	This warning occurs before dynamic brake overload alarm (A.731) occurs. If the warning is ignored and operation continues, a dynamic brake overload alarm may occur.
A.94A ^{*2}	Data Setting Warning 1 (Parameter Number Error)	Incorrect command parameter number was set.
A.94B ^{*2}	Data Setting Warning 2 (Out of Range)	Command input data is out of range.
A.94C ^{*2}	Data Setting Warning 3 (Calculation Error)	Calculation error was detected.
A.94D ^{*2}	Data Setting Warning 4 (Parameter Size)	Data size does not match.
A.94E ^{*2}	Data Setting Warning 5 (Latch Mode Error)	Latch mode error is detected.
A.95A ^{*2}	Command Warning 1 (Unsatisfying Command)	Command was sent although the conditions for sending a command were not satisfied.
A.95B ^{*2}	Command Warning 2 (Non-supported Command)	Unsupported command was sent.
A.95D ^{*2}	Command Warning 4 (Command Interference)	Command, especially latch command, interferes.
A.95E ^{*2}	Command Warning 5 (Subcommand Disable)	Subcommand and main command interfere.
A.95F ^{*2}	Command Warning 6 (Undefined Command)	Undefined command was sent.
A.960 ^{*2}	MECHATROLINK Communications Warning	Communications error occurred during MECHATROLINK communications.
A.971 ^{*3}	Undervoltage	This warning occurs before undervoltage alarm (A.410) occurs. If the warning is ignored and operation continues, an undervoltage alarm may occur.
A.9A0 ^{*1}	Overtravel	Overtravel is detected while the servomotor power is ON.

*1. Use Pn008.2 to activate or not the warning detection.

*2. Use Pn800.1 to activate or not the warning detection.

*3. Use Pn008.1 to activate or not the warning detection.

8.2.2 Troubleshooting of Warnings

Refer to the following table to identify the cause of a warning and the action to be taken. Contact your Yaskawa representative if the problem cannot be solved by the described corrective action.

Warning Number: Warning Name (Warning Description)	Cause	Investigative Actions	Corrective Actions
A.900: Position Error Overflow	The servomotor U, V, and W wirings is faulty.	Check the servomotor main circuit cable connection.	Confirm that there is no contact fault in the motor wiring or linear scale wiring.
	The SERVOPACK gain is too low.	Check the SERVOPACK gain.	Increase the servo gain by using the function such as advanced autotuning.
	The acceleration of the position reference is too high.	Reduce the reference acceleration, and operate the SERVOPACK.	Reduce the reference acceleration of the position reference using a MECHATROLINK command, or smooth the acceleration of the position reference by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.
	Setting of the excessive position error alarm level (Pn520) is low against the operating condition.	Check the alarm level (Pn520) to see if it is set to an appropriate value.	Set the Pn520 to proper value.
	A SERVOPACK fault occurred.	—	Turn the power supply OFF and then ON again. If the alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.
A.901: Position Error Overflow Alarm at Servo ON	When the servomotor power is ON, the position error exceeded the parameter setting (Pn526×Pn528/100).	—	Set an appropriate value for the excessive position error warning level at servo ON (Pn528).
A.910: Overload (Warning before alarm A.710 or A.720 occurs)	Incorrect wiring or contact fault of servomotor and linear scale.	Check the wiring.	Confirm that the servomotor and linear scale are correctly wired.
	Operation beyond the overload protection characteristics.	Check the motor overload characteristics and executed run command.	Reconsider the load conditions and operating conditions. Or, increase the motor capacity.
	Excessive load was applied during operation because the servomotor was not driven due to mechanical problems.	Check the executed operation reference and motor speed.	Remove the mechanical problems.
	A SERVOPACK fault occurred.	—	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.911: Vibration	Abnormal vibration was detected at the motor speed.	Check for abnormal noise from the servomotor, and check the speed and force waveforms during operation.	Reduce the motor speed or reduce the servo gain by using the function such as one-parameter tuning.
	The mass ratio (Pn103) value is greater than the actual value or is greatly changed.	Check the mass ratio.	Set the mass ratio (Pn103) to an appropriate value.

(cont'd)

Warning Number: Warning Name (Warning Description)	Cause	Investigative Actions	Corrective Actions
A.920: Regenerative Overload (Warning before the alarm A.320 occurs)	The power supply voltage exceeds the specified limit.	Measure the power supply voltage.	Set the power supply voltage within the specified range.
	Insufficient external regenerative resistance, regenerative resistor capacity, or SERVOPACK capacity. Or, regenerative power has been continuously flowing back.	Check the operating condition or the capacity using the capacity selection Software SigmaJunmaSize+, etc.	Change the regenerative resistance, regenerative resistor capacity, or SERVOPACK capacity. Reconsider the operating conditions using the capacity selection software SigmaJunmaSize+, etc.
	Regenerative power continuously flowed back because negative load was continuously applied.	Check the load to the servomotor during operation.	Reconsider the system including servo drives, machine, and operating conditions.
A.921: Dynamic Brake Overload (Warning before the alarm A.731 occurs)	The servomotor moves because of external force.	Check the operation status.	Take measures to ensure the servomotor will not move because of external force.
	The moving energy at a DB stop exceeds the DB resistance capacity.	Check the power consumed by DB resistance (Un00B) to see how many times the DB has been used.	Reconsider the following: <ul style="list-style-type: none"> • Reduce the motor reference speed. • Reduce the mass ratio. • Reduce the number of times of the DB stop operation.
	A SERVOPACK fault occurred.	—	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.94A Data Setting Warning 1 (Parameter Number Error)	Disabled parameter number was used.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Use the correct parameter number.
A.94B Data Setting Warning 2 (Out of Range)	Attempted to send values outside the range to the command data.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Set the value of the parameter within the allowable range.
A.94C Data Setting Warning 3 (Calculation Error)	Calculation result of set value is incorrect.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Set the value of the parameter within the allowable range.
A.94D Data Setting Warning 4 (Parameter Size)	Parameter size set in command is incorrect.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Use the correct parameter size.
A.94E Data Setting Warning 5 (Latch mode error)	Latch mode error is detected.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Change the setting value of Pn850 or the LT_MOD data for the LTMOD_ON command sent by the host controller to the proper value.
A.95A Command Warning 1 (Unsatisfying Command)	Command sending condition is not satisfied.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Send a command after command sending condition is satisfied.

(cont'd)

Warning Number: Warning Name (Warning Description)	Cause	Investigative Actions	Corrective Actions
A.95B Command Warning 2 (Non-supported Command)	SERVOPACK received unsupported command.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Do not sent an unsupported command.
A.95D Command Warning 4 (Command Interference)	Command sending condition for latch-related commands is not satisfied.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Send a command after command sending condition is satisfied.
A.95E Command Warning 5 (Subcommand Disable)	Subcommand sending condition is not satisfied.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Send a command after command sending condition is satisfied.
A.95F Command Warning 6 (Undefined Command)	Undefined command was sent.	Refer to 8.3 <i>Monitoring Communication Data on Occurrence of an Alarm or Warning</i> to determine which command was the cause of the warning.	Do not use an undefined command.
A.960 MECHATROLINK Communications Warning	MECHATROLINK wiring is incorrect.	Confirm the wiring.	Correct the MECHATROLINK wiring. Or, connect a terminal to the terminal station.
	MECHATROLINK data reception error occurred due to noise interference.	Confirm the installation conditions.	Take measures against noise. Check the MECHATROLINK communications cable and FG wiring and take measures such as adding ferrite core on the MECHATROLINK communications cable.
	A SERVOPACK fault occurred.	—	A fault occurred in the SERVOPACK. Replace the SERVOPACK.

(cont'd)

Warning Number: Warning Name (Warning Description)	Cause	Investigative Actions	Corrective Actions
A.971: Undervoltage	<ul style="list-style-type: none"> • For 100 VAC SERVOPACKs: The AC power supply voltage is 60 V or less. • For 200-VAC SERVOPACKs: The AC power supply voltage is 140 V or less. • For 400-VAC SERVOPACKs: The AC power supply voltage is 280 V or less. 	Measure the power supply voltage.	Set the power supply voltage within the specified range.
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.
	Occurrence of instantaneous power interruption.	Measure the power supply voltage.	When the instantaneous power cut hold time (Pn509) is set, decrease the setting.
	The SERVOPACK fuse is blown out.	—	Replace the SERVOPACK and connect a reactor to the SERVOPACK.
	A SERVOPACK fault occurred.	—	The SERVOPACK may be faulty. Replace the SERVOPACK.
A.9A0: Overtravel (Overtravel status is detected.)	When the servomotor power is ON, overtravel status is detected.	Check the input signal monitor (Un005) to check the status of the overtravel signals.	<p>Refer to <i>8.4 Troubleshooting Malfunction Based on Operation and Conditions of the Servomotor</i>. Even if overtravel signals were not shown by the input signal monitor (Un005), momentary overtravel may have been detected. Take the following precautions.</p> <ul style="list-style-type: none"> • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Take countermeasures for noise.

8.3 Monitoring Communication Data on Occurrence of an Alarm or Warning

The command data received on occurrence of an alarm or warning, such as a data setting warning (A.94□) or a command warning (A.95□) can be monitored using the following parameters. The following is an example of the data when an alarm/warning has occurred in the normal state.

Command Data Monitor at Alarm/Warning Occurrence:Pn890 to Pn89E
Response Data Monitor at Alarm/Warning Occurrence:Pn8A0 to Pn8AE

Command Byte Order	Command Data Storage at Alarm/Warning Occurrence	
	CMD	RSP
1	Pn890.1 to 0	Pn8A0.1 to 0
2	Pn890.3 to 2	Pn8A0.3 to 2
3	Pn890.5 to 4	Pn8A0.5 to 4
4	Pn890.7 to 6	Pn8A0.7 to 6
5 to 8	Pn892	Pn8A2
9 to 12	Pn894	Pn8A4
13 to 16	Pn896	Pn8A6
17 to 20	Pn898	Pn8A8
21 to 24	Pn89A	Pn8AA
25 to 28	Pn89C	Pn8AC
29 to 32	Pn89E	Pn8AE

Example: Pn8A0 = 87 65 43 21

- Note 1. Data is stored in little endian byte order and displayed in the hexadecimal format.
2. For details on commands, refer to *ΣV Series User's Manual MECHATROLINK-II Commands* (No.: SIEP S800000 54)

8.4 Troubleshooting Malfunction Based on Operation and Conditions of the Servomotor

Troubleshooting for the malfunctions based on the operation and conditions of the servomotor is provided in this section.

Be sure to turn OFF the servo system before troubleshooting items shown in bold lines in the table.

Problem	Probable Cause	Investigative Actions	Corrective Actions
Servomotor Does Not Start	The control power supply is not ON.	Check voltage between control power terminals.	Correct the wiring.
	The main circuit power supply is not ON.	Check the voltage between main circuit power terminals.	Correct the wiring.
	Wiring of I/O signal connector CN1 is faulty or disconnected.	Check if the connector CN1 is properly inserted and connected.	Correct the connector CN1 connection.
	Wiring for servomotor main circuit cable or linear scale connection cables is disconnected.	Check the wiring.	Correct the wiring.
	Overloaded	Run under no load and check the load status.	Reduce load or replace with larger capacity servomotor.
	Linear scale type differs from parameter setting (Pn002.2).	Check the settings for parameter Pn002.2.	Set parameter Pn002.2 to the linear scale type being used.
	Settings for the input signal selections (Pn50A, Pn50B and Pn511) is incorrect.	Check the settings for parameters Pn50A, Pn50B and Pn511.	Correct the settings for parameter Pn50A, Pn50B and Pn511.
	SV_ON command is not sent.	Check the command sent from the host controller.	Send the SV_ON command.
	SENS_ON command is not sent.	Check the command sent from the host controller.	Send the command in the correct SERVOPACK sequence.
	The forward run prohibited (P-OT) and reverse run prohibited (N-OT) input signals are turned OFF.	Check P-OT or N-OT input signal.	Turn P-OT or N-OT input signal ON.
	The safety input signal (/HWBB1 or /HWBB2) remains OFF.	Check the /HWBB1 and /HWBB2 input signal.	Set the /HWBB1 and /HWBB2 input signal to ON. When not using the safety function, mount the safety function jumper connector (provided as an accessory) on the CN8.
	A SERVOPACK fault occurred.	–	Replace the SERVOPACK.
	The polarity detection is not executed.	Check the parameter Pn080.0.	Correct the setting of Pn080.0.
Check the SV_ON command.		<ul style="list-style-type: none"> When using an incremental linear scale, send the SV_ON command from the host controller. When using an absolute linear scale, execute Fn080. 	

(cont'd)

Problem	Probable Cause	Investigative Actions	Corrective Actions
Servomotor Moves Instantaneously, and then Stops	Servomotor wiring is incorrect.	Check the wiring.	Correct the wiring.
	Serial converter unit wiring is incorrect.	Check the wiring.	Correct the wiring.
	Linear scale wiring is incorrect.	Check the wiring.	Correct the wiring.
	Linear scale pitch (Pn282) is incorrect.	Check the setting of Pn282.	Correct the setting of Pn282.
	Linear scale counting up direction and servomotor coil assembly forward direction do not agree.	Check the directions.	Change the setting of Pn080.1 (Motor Phase Selection). Match the linear scale direction and coil assembly direction.
	Polarity detection is not performed correctly.	Check if the value of Un004 (electrical angle 2 from polarity origin) at an arbitrary position is between ± 10 degrees.	Correct the settings for the polarity detection related parameter.
Servomotor Speed Unstable	Wiring connection to servomotor is defective.	Check connections of power line (phases U, V, and W) and serial converter unit connectors.	Tighten any loose terminals or connectors and correct the wiring.
Servomotor Moves Without Reference Input	A SERVOPACK fault occurred.	–	Replace the SERVOPACK.
	Linear scale counting up direction and servomotor coil assembly forward direction do not agree.	Check the directions.	Change the setting of Pn080.1 (Motor Phase Selection). Match the linear scale direction and servomotor direction.
	Polarity detection is not performed correctly.	Check if the value of Un004 (electrical angle 2 from polarity origin) at an arbitrary position is between ± 10 degrees.	Correct the settings for the polarity detection related parameter.
Dynamic Brake Does Not Operate	Improper Pn001.0 setting	Check the setting for parameter Pn001.0.	Correct the setting for parameter Pn001.0.
	DB resistor disconnected	Check if excessive mass, motor overspeed, or DB frequently activated occurred.	Replace the SERVOPACK, and reduce the load.
	DB drive circuit fault	–	There is a defective component in the DB circuit. Replace the SERVOPACK.
Abnormal Noise from Servomotor	The servomotor largely vibrated during execution of tuning-less function.	Check the motor speed waveform.	Reduce the load so that the mass ratio becomes within the allowable value, or increase the load level or lower the tuning level for the tuning-less levels setting (Fn200).
	Mounting is not secured.	Check if there are any loose mounting screws.	Tighten the mounting screws.
	Vibration source at the driven machine.	Check for any foreign matter, damage, or deformations on the machinery's movable parts.	Contact the machine manufacturer.
	Noise interference due to incorrect I/O signal cable specifications.	The I/O signal cable must be tinned annealed copper shielded twisted-pair or screened unshielded twisted-pair cable with a core of 0.12 mm^2 min.	Use the specified I/O signal cable.
	Noise interference due to length of I/O signal cable.	Check the length of the I/O signal cable.	The I/O signal cable length must be no more than 3 m.
	Noise interference due to incorrect cable specifications of linear scale connection cables.	The linear scale connection cables must be tinned annealed copper shielded twisted-pair or screened unshielded twisted-pair cable with a core of 0.12 mm^2 min.	Use the specified linear scale connection cables.

(cont'd)

Problem	Probable Cause	Investigative Actions	Corrective Actions
Abnormal Noise from Servomotor (cont'd)	Noise interference due to length of linear scale connection cables.	Check the length of the linear scale connection cables.	The length of each cable must be equal to or shorter than the maximum wiring length listed here. <ul style="list-style-type: none"> • Connection cables for serial converter unit: 20 m • Connection cables for linear scale: 15 m • Connection cables for hall sensor: 15 m
	Noise interference due to damaged linear scale connection cables.	Check if the linear scale connection cables are bent and the sheaths are damaged.	Replace the linear scale connection cables and correct the cable layout.
	Excessive noise to the linear scale connection cables.	Check if the linear scale connection cables are bundled with a high-current line or near a high-current line.	Correct the cable layout so that no surge is applied.
	The FG potential varies because of influence from machines on the servomotor side, such as the welder.	Check if the machines are correctly grounded.	Properly ground the machines to separate from the linear scale FG.
	SERVOPACK pulse counting error due to noise interference	Check if there is noise interference on the I/O signal line from the linear scale.	Take measures against noise in the linear scale wiring.
	Excessive vibration and shock to the linear scale	Check if vibration from the machine occurred or linear scale installation is incorrect (mounting surface accuracy and fixing method).	Reduce vibration from the machine, or secure the linear scale installation.
	Serial converter unit fault	—	Replace the serial converter unit.
	A linear scale fault occurred.	—	Replace the linear scale.
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	Unbalanced servo gains	Check to see if the servo gains have been correctly adjusted.	Execute the advanced autotuning.
	Speed loop gain value (Pn100) too high.	Check the speed loop gain (Pn100). Factory setting: $K_v = 40.0$ Hz	Reduce the speed loop gain (Pn100).
	Position loop gain value (Pn102) too high.	Check the position loop gain (Pn102). Factory setting: $K_p = 40.0/s$	Reduce the position loop gain (Pn102).
	Incorrect speed loop integral time constant (Pn101)	Check the speed loop integral time constant (Pn101). Factory setting: $T_i = 20.0$ ms	Correct the speed loop integral time constant (Pn101).
	Incorrect mass ratio (Pn103)	Check the mass ratio (Pn103).	Correct the mass ratio (Pn103).
High Motor Speed Overshoot on Starting and Stopping	Unbalanced servo gains	Check to see if the servo gains have been correctly adjusted.	Execute the advanced autotuning.
	Speed loop gain value (Pn100) too high	Check the speed loop gain (Pn100). Factory setting: $K_v = 40.0$ Hz	Reduce the speed loop gain (Pn100).
	Position loop gain value (Pn102) too high	Check the position loop gain (Pn102). Factory setting: $K_p = 40.0/s$	Reduce the position loop gain (Pn102).
	Incorrect speed loop integral time constant (Pn101)	Check the speed loop integral time constant (Pn101). Factory setting: $T_i = 20.0$ ms	Correct the speed loop integral time constant (Pn101).
	Incorrect mass ratio data (Pn103)	Check the mass ratio (Pn103).	Correct the mass ratio (Pn103).
	The force reference is saturated.	Check the force reference wave form.	Use the mode switch function.
	The force limit (Pn483, Pn484) is set to the initial value.	Initial value of force limit: Pn483 = 30% Pn484 = 30%	Set a appropriate value for Pn483 and Pn484 (Force Limit).

(cont'd)

Problem	Probable Cause	Investigative Actions	Corrective Actions
Absolute Linear Scale Position Difference Error (The position saved in the host controller when the power was turned OFF is different from the position when the power was next turned ON.)	Noise interference due to incorrect cable specifications of linear scale connection cables.	The linear scale connection cables must be tinned annealed copper shielded twisted-pair or screened unshielded twisted-pair cable with a core of 0.12 mm ² min.	Use the specified linear scale connection cables.
	Noise interference due to length of linear scale connection cables.	Check the length of the linear scale connection cables.	The length of each cable must be equal to or shorter than the maximum wiring length listed here. <ul style="list-style-type: none"> • Connection cables for serial converter unit: 20 m • Connection cables for linear scale: 15 m • Connection cables for hall sensor: 15 m
	Noise interference due to damaged linear scale connection cables.	Check if the linear scale connection cables are bent and the sheaths are damaged.	Replace the linear scale connection cables and correct the cable layout.
	Excessive noise to the linear scale connection cables.	Check if the linear scale connection cables are bundled with a high-current line or near a high-current line.	Correct the cable layout so that no surge is applied.
	FG potential varies because of influence of machines such as welders at the servomotor.	Check if the machines are correctly grounded.	Ground machines correctly, and prevent diversion to the FG on the linear scale side.
	SERVOPACK pulse counting error due to noise interference	Check if there is noise interference on the I/O signal line from the serial converter unit.	Take measures against noise in the serial converter unit wiring.
	Excessive vibration and shock to the linear scale	Check if vibration from the machine occurred or linear scale installation is incorrect (mounting surface accuracy and fixing method).	Reduce vibration from the machine, or secure the linear scale installation.
	A linear scale fault occurred.	–	Replace the linear scale.
	A SERVOPACK fault occurred. (The pulse count does not change.)	–	Replace the SERVOPACK.
	Host controller serial data reading error	Check the error detection section of the host controller.	Correct the error detection section of the host controller.
Check if the host controller is executing data parity checks.		Execute a serial data parity check.	
Check noise in the cable between the SERVOPACK and the host controller.		Take measures against noise, and again execute a serial data parity check.	

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Problem	Probable Cause	Investigative Actions	Corrective Actions
Overtravel (OT)	Forward or reverse run prohibited signal is input.	Check the external power supply (+24 V) voltage for the input signal.	Correct the external power supply (+24 V) voltage.
		Check if the overtravel limit switch operates properly.	Correct the overtravel limit switch.
		Check if the overtravel limit switch is wired correctly.	Correct the overtravel limit switch wiring.
		Check the settings for parameters Pn50A and Pn50B.	Correct the settings for parameters Pn50A and Pn50B.
	Forward or reverse run prohibited signal malfunctioning.	Check the fluctuation of the external power supply (+24 V) voltage for the input signal.	Stabilize the external power supply (+24 V) voltage.
		Check if the overtravel limit switch operates correctly.	Correct the overtravel limit switch.
		Check if the overtravel limit switch wiring is correct. (check for damaged cables or loose screws.)	Correct the overtravel limit switch wiring.
	Incorrect forward or reverse run prohibited signal (P-OT/N-OT) allocation (parameters Pn50A.3, Pn50B.0)	Check if the P-OT signal is allocated in Pn50A.3.	If another signal is allocated in Pn50A.3, allocate P-OT.
		Check if the N-OT signal is allocated in Pn50B.0.	If another signal is allocated in Pn50B.0, allocate N-OT.
	Incorrect servomotor stop method selection	Check the settings for parameters Pn001.0 and Pn001.1 when the servomotor power is OFF.	Select a servomotor stop method other than "coast to stop."
Check the settings for parameters Pn001.0 and Pn001.1 when in force control.		Select a servomotor stop method other than "coast to stop."	
Improper Stop Position by Overtravel (OT) Signal	Improper limit switch position and dog length	—	Install the limit switch at the appropriate position.
	The overtravel limit switch position is too short for the coasting distance.	—	Install the overtravel limit switch at the appropriate position.

(cont'd)

Problem	Probable Cause	Investigative Actions	Corrective Actions
Position Error (Without Alarm)	Noise interference due to incorrect linear scale connection cable specifications	The linear scale connection cable must be tinned annealed copper shielded twisted-pair or screened unshielded twisted-pair cable with a core of 0.12 mm ² min.	Use the specified linear scale connection cable.
	Noise interference due to length of linear scale connection cables.	Check the length of the linear scale connection cables.	The length of each cable must be equal to or shorter than the maximum wiring length listed here. <ul style="list-style-type: none"> • Connection cables for serial converter unit: 20 m • Connection cables for linear scale: 15 m • Connection cables for hall sensor: 15 m
	Noise influence due to damaged linear scale connection cables.	Check if the linear scale connection cables are bent and the sheaths are damaged.	Replace the linear scale connection cables and modify the cable layout.
	Excessive noise to linear scale connection cables.	Check if the linear scale connection cables are bundled with a high-current line or near a high-current line.	Change the cable layout so that no surge is applied.
	The FG potential varies because of influence from machines on the servomotor side such as the welder.	Check if the machines are correctly grounded.	Properly ground the machines linear scale FG.
	SERVOPACK pulse count error due to noise	Check if the I/O signal line from the serial converter unit is influenced by noise.	Take measures against noise in the serial converter unit wiring.
	Excessive vibration and shock to the linear scale	Check if vibration from the machine occurred or linear scale installation is incorrect (mounting surface accuracy and fixing method).	Reduce the machine vibration or mount the linear scale securely.
	Noise interference due to improper I/O signal cable specifications	The I/O signal cable must be tinned annealed copper shielded twisted-pair or screened unshielded twisted-pair cable with a core of 0.12 mm ² min.	Use input signal cable with the specified specifications.
	Noise interference due to length of I/O signal cable	Check the I/O signal cable length.	The I/O signal cable length must be no more than 3 m.
	A linear scale fault occurred. (The pulse count does not change.)	–	Replace the linear scale.
A SERVOPACK fault occurred.	–	Replace the SERVOPACK.	
Servomotor Overheated	Ambient operating temperature too high	Measure the servomotor ambient operating temperature.	Reduce the ambient operating temperature to 40°C or less.
	Servomotor surface dirty	Visually check the surface.	Clean dust and oil from the surface.
	Servomotor overloaded	Check the load status with monitor.	If overloaded, reduce load or replace with larger capacity SERVOPACK and servomotor.
	Polarity detection is not performed correctly.	Check if the value of Un004 (electrical angle 2 from polarity origin) at an arbitrary position is between ±10 degrees.	Correct the settings for the polarity detection related parameter.