Fanuc CNC Alarm Codes:

Below is a **practical FANUC CNC alarm-code reference** in the same spirit as the Haas list. FANUC alarm meanings depend heavily on the **control series** — 0i, 16i, 18i, 21i, 30i, 31i, 32i, etc. — and on the **machine-tool builder's ladder/PMC logic**, so treat this as a consolidated shop-floor guide, not a replacement for the exact FANUC and machine-builder manuals.

FANUC's Series 30i/31i/32i-B maintenance manual organizes alarms into categories such as **PS/BG/SR program and communication alarms, SW parameter-writing alarms, SV servo alarms, OT overtravel alarms, IO file alarms, PW power-off-required alarms, SP spindle alarms, OH overheat alarms, DS other alarms, IE malfunction-prevention alarms, PMC alarms, and serial-spindle alarms**. The same manual notes that PS/BG/SR alarms share alarm numbers and are displayed with prefixes such as `PS0003`, `BG0085`, and `SR0001`.

Use proper lockout/tagout and qualified personnel for electrical, servo, spindle, and amplifier work. FANUC's maintenance manual states that CNC maintenance must be done by a qualified technician, warns about high-voltage cabinet hazards, and says voltage can remain in servo and spindle amplifiers after power-off.

How to read FANUC alarm codes

Prefix / style	What it usually means	Notes
`PSxxxx` or older `P/S xxx`	Program, operation, G-code, macro, and editing alarms	Common examples: illegal G-code, arc errors, feed zero, missing program, macro syntax error.
`BGxxxx`	Background edit alarm	Uses the same alarm-number family as PS alarms.
`SRxxxx`	Communication / reader-punch / serial communication alarm	Common around RS-232, external I/O, reader/punch, or data server communication.
`SW0100`	Parameter write enable alarm	Parameter writing is enabled; turn PWE off after service.
`SVxxxx`	Servo, axis, amplifier, encoder, FSSB, power-supply-related servo alarms	Includes V-ready, overcurrent, overheat, pulse coder, battery, and FSSB faults.
`OTxxxx`	Overtravel or interference alarms	Soft/hard overtravel, pre-check overtravel, interference zones.
`IOxxxx`	CNC file/memory alarms	File system, program storage memory, checksum, memory access.

PWxxxx	Alarm requiring power OFF/ON	Often after parameter changes or safety/CPU/RAM faults.
SPxxxx	CNC spindle-control alarm	Rigid tapping, spindle positioning, serial spindle communication, spindle data, etc.
SP9001+	Serial spindle amplifier alarm family	Often corresponds to the 2-digit alarm shown on the spindle amplifier display.
OHxxxx	Overheat alarm	Cabinet, fan, spindle overheat.
DSxxxx	“Other” alarms	Absolute pulse coder, battery, reference return, power-supply fan, parameter checksum, DCS-related alarms.
PMC, PC, ER, or machine alarm numbers such as 1000+	Machine-tool-builder / ladder alarms	These are often specific to the builder: tool changer, hydraulic, chuck, door, lube, pallet changer, robot, bar feeder, etc.

FANUC America also maintains official CNC tech-tip pages for troubleshooting common CNC module, battery, fan, servo-amplifier, spindle-amplifier, and power-supply alarm topics.

Program / operation / macro alarms

These are typically shown as PSxxxx, P/S xxx, BGxxxx, or SRxxxx, depending on mode and control generation. The manual’s PS/BG/SR table starts with program-reading, word-format, feed, G-code, plane, arc, cutter-compensation, memory, I/O, reference-return, and macro alarms.

Code	Description	Troubleshooting advice
0001	TH error while reading from input device	Check program media, input device, cable, data format, and diagnostics showing the bad read code.
0002	TV error / single-block TV check error	Check tape/serial data format. Disable TV check only if your shop standard allows it.
0003	Too many digits	A word has more digits than permitted. Check decimal placement, units, post output, and unusually large coordinate/feed values.
0004 / 0005	Invalid word format / no data after address	Look for an address without a number, malformed macro expression, or bad post output.

0006	Illegal minus sign	Remove a minus sign where it is not allowed. Common with offsets, variables, dwell, or modal values.
0007	Illegal decimal point	Remove decimal where not permitted or correct duplicate decimal points.
0009	Improper NC address	Unsupported address or axis/address parameter issue. Check the block and axis parameter configuration.
0010	Improper G-code	Unsupported G-code, missing option, wrong machine type, or bad post. Verify control options and post processor.
0011	Feed zero	Add a valid `F` value; check rigid tapping feed/lead and any post-generated tiny feed.
0014	Cannot command G95	Synchronous feed/threading option missing or not enabled. Use the correct feed mode or verify options.
0015	Too many simultaneous axes	Reduce commanded axes in one block or verify simultaneous-axis option.
0020	Arc radius over tolerance	Check `I/J/K` or `R`, start/end points, plane selection, units, CAM arc tolerance, and post output.
0021	Illegal plane select	Check `G17/G18/G19`; do not specify conflicting parallel axes in the selected plane.
0022	`R` or `I/J/K` command not found	Circular interpolation lacks radius or center data. Add valid `R` or `I/J/K`.
0025	Circular cut in rapid / F0	Circular interpolation was attempted with rapid/inverse feed issue. Add valid feed and correct modal state.
0027	No axis commanded in `G43/G44`	Tool-length compensation block is incomplete or has invalid axis use.
0029 / 0030	Illegal offset value or offset number	Check `H`, `D`, `T`, geometry/wear table limits, and offset-memory option.
0031 / 0032	Illegal `G10` command or offset value	Check `G10 L/P/R` format, sign, decimal, address range, and offset value limits.
0033	No intersection in cutter compensation	CAM path cannot solve cutter-comp intersection. Add proper lead-in/lead-out, reduce cutter radius, or correct contour.
0034	No circular move allowed in cutter-comp startup/cancel block	Start or cancel `G41/G42` with a linear move, not `G02/G03`.

0035	Cannot command G31	Cancel conflicting modal groups such as cutter comp, or verify torque-limit skip setup.
0037	Cannot change plane in G41/G42	Cancel cutter comp before changing G17/G18/G19.
0038 / 0041	Cutter-comp interference / overcut risk	Check lead-in/out, corner radii, cutter radius, tool-nose radius, and contour geometry.
0039	Chamfer/corner-R not allowed in G41/G42	Remove chamfer/corner-R during comp startup/cancel or rewrite toolpath.
0042	G45-G48 not allowed in cutter-radius compensation	Cancel cutter-radius compensation before using these offset commands.
0043	Illegal T-code command	Check tool number range, ATC command format, M06 sequence, and builder-specific tool-change format.
0044	G27-G30 not allowed in canned cycle	Cancel canned cycle before reference-position commands.
0045	Address Q not found in G73/G83	Add a valid nonzero peck amount.
0046	Illegal reference-return command	Check G28/G30 and P value for 2nd/3rd/4th reference return.
0047 / 0048	Illegal axis select / basic 3 axes not found	Check axis parameters for 3D compensation or coordinate conversion.
0049	Illegal G68/G69 command	Cancel incompatible tool compensation or correct nesting of 3D coordinate conversion and tool-length compensation.
0050–0058	Chamfer/corner-R/direct-dimension programming errors	Check next block, endpoint, angle, taper, move length, and direct-dimension syntax.
0060	Sequence number not found	Search target not present. Check N number, restart block, workpiece number, or tool-data search.
0061–0069	Multiple repetitive cycle / lathe roughing-cycle errors	Check G70/G71/G72/G73, P/Q, monotonic shape, first/last shape block, and allowable commands.
0070	No program space in memory	Delete unused programs, reduce program size, or use external memory/DNC.

0071	Data not found	Program, address, restart block, or searched data not found. Verify `O`/`N` numbers and search target.
0072	Too many programs	Delete unnecessary programs or check memory/program-count option.
0073	Program number already in use	Rename the program or delete/overwrite intentionally.
0074	Illegal program number	Program number outside allowed range. Use a valid `O` number.
0075	Protect	Program number is protected, password mismatch, or program is being edited. Check edit protection and background edit.
0076	Program not found	Subprogram/macro/graphic-copy target missing. Load the `O` program and verify `M98`, `G65`, aliases, and path.
0077	Too many subprogram/macro nestings	Reduce nested `M98/G65/G66` calls.
0078	Sequence number not found	`GOTO`, `M99P`, or sequence search target missing.
0079	Program not match	Memory program does not match comparison source. Check program version and parameterized matching mode.
0085	Overrun / parity / framing error	Check RS-232 baud rate, stop bits, parity, cable, I/O setting, and sending device.
0086	DR off	External I/O device not ready, off, cable broken, or interface board fault.
0087	Buffer overflow	Sending device continued after stop. Check handshaking and cable.
0090	Reference return incomplete	Start too close to reference point, return speed too slow, or absolute-position zero cannot be set. Move away and repeat zero return; check decel dog, encoder, and battery condition.
0091	Manual reference return not allowed in feed hold	Reset/stop automatic operation, then perform manual reference return.
0092	Zero-return check error	`G27` axis did not return to zero. Correct program or zero-return position.

0094–0099	Program-restart restrictions	Coordinate/offset/power/MDI state changed after interruption. Follow the operator manual restart sequence.
0109	Format error in `G08`	Correct `G08 P` format.
0110 / 0111	Integer or floating overflow	Macro math result too large. Check variables, units, and formula.
0112	Divide by zero	Fix macro denominator or conditional logic.
0113–0115	Improper macro command, expression, or variable number	Check brackets, functions, variable ranges, and macro option support.
0116	Write-protected variable	Do not assign to read-only system variables.
0118 / 0122	Too many bracket or macro nestings	Simplify macro expressions or call structure.
0119	Argument value out of range	Check macro function argument limits.
0123	Illegal mode for `GOTO/WHILE/DO`	Do not use restricted macro control statements in MDI/DNC where prohibited.
0124–0128	Macro `END`, loop, duplicate statement, or sequence error	Match `DO/END`, remove duplicate NC/macro statements, and verify `GOTO`/`M99P` targets.
0130	NC and PMC axis conflicted	CNC axis command and PMC axis command conflict. Check ladder state, machine mode, and axis interlocks.
0136 / 0137	Spindle-positioning or M-code/move conflict	Separate spindle positioning, M-code, and axis motion as required by the control/builder.

Parameter, memory, overtravel, and power-required alarms

FANUC lists `SW0100` as a parameter-enable alarm, `OT0500–OT0507` as soft/hard overtravel alarms, `IO1001+` as file/memory alarms, and `PW0000+` as alarms requiring power to be turned off and back on.

Code	Description	Troubleshooting advice

SW0100	Parameter enable switch on / PWE on	Finish the parameter task, back up parameters, then turn PWE off. Leaving PWE on can create avoidable risk.
IO1001	File access error	File system could not be accessed. Try a known-good memory device, reboot, and check CNC memory/storage.
IO1002	File system error	Check storage media, file system, memory card/CF/USB, and CNC file-system state.
IO1030	Program storage checksum error	Back up what is readable. Suspect corrupted part-program storage memory or file system.
IO1032	Memory access over range	Possible program-storage memory problem. Back up and contact service if persistent.
OT0500 / OT0501	Soft overtravel 1, + / - direction	Jog away in the permitted direction, check work offset, tool length, G52/G92, fixture offsets, stroke limits, and program.
OT0502 / OT0503	Soft overtravel 2 or chuck/tailstock barrier	Check stored-stroke limit 2, chuck/tailstock barrier, jaw position, tailstock zone, and workholding setup.
OT0504 / OT0505	Soft overtravel 3	Check secondary stored-stroke limits and builder-set protected zones.
OT0506 / OT0507	Hard overtravel + / -	Limit switch triggered. Follow builder recovery procedure; check limit switch, dog, wiring, axis position, and crash damage.
OT0508 / OT0509	Interference + / -	Tool, turret, spindle, or post interference zone violated. Review program and machine interference settings.
OT0510 / OT0511	Pre-check overtravel	Control predicted an overtravel before the move. Check programmed endpoint before pressing cycle start again.
PW0000	Power must be off	Parameter or configuration change requires CNC power off/on. Save data and cycle power properly.
PW0001 / PW0002	PMC X-address or axis address not assigned/correct	Check PMC address assignment parameters and reference-return/axis signal mapping.
PW0006	Power must be off, malfunction-prevention alarm	Review the preceding alarm and power-cycle only after the cause is understood.

PW0008 / PW0009	CPU self-test error on DCS PMC or PMC side	Safety/PMC hardware or memory self-test fault. Do not bypass; involve qualified service.
PW0010–PW0013	Safe I/O cross-check errors	Check DCS/PMC safety I/O wiring, dual-channel safety devices, door locks, E-stops, and safety relays.
PW0014–PW0018	CNC CPU, safety parameter, RAM, safety execution, or CRC error	Back up data if possible; suspect parameter corruption, memory, or CNC hardware. Contact FANUC/MTB service.

Servo, axis, encoder, APC, and FSSB alarms

Servo alarms can be caused by programming/load problems, mechanical binding, amplifier/power faults, motor faults, encoder/pulsecoder faults, FSSB optical communication faults, or parameter/configuration errors. FANUC's manual states that SV0401 is issued when the servo amplifier's VRDY signal does not turn on or turns off during operation; it also lists many servo, pulse-coder, power-supply, fan, and FSSB alarms.

Code	Description	Troubleshooting advice
SV0001–SV0005	Synchronous, composite, superimposed, or torque-limit skip excess error	Check master/slave synchronization parameters, axis coupling, mechanical alignment, torque limits, and companion servo alarms.
SV0006	Illegal tandem axis	Check tandem-axis parameters and absolute-position detector settings.
SV0007	Servo alarm on another path / multi-axis amplifier	Resolve the original alarm on the other path/axis sharing the amplifier.
SV0010	Servo amplifier internal overheat	Check cabinet cooling, amplifier fan, filter, ambient temperature, and axis load.
SV0011	Servo motor overcurrent, software detected	Check motor power cable, open phase, short circuit, mechanical jam, crash damage, brake release, and amplifier.
SV0012	Drive-off circuit failure	Check dual drive-off inputs, safety circuit, amplifier, and wiring.

SV0013 / SV0014	Servo CPU bus failure / watchdog	Power-cycle once. If repeated, suspect amplifier control board or servo software/hardware.
SV0015 / SV0016	Low voltage driver / current detect error	Check amplifier seating, control power, current-detection circuit, and amplifier hardware.
SV0019 / SV0020	Power-supply ground fault	Check motor insulation, power cable, coolant contamination, amplifier output, and ground fault in motor/cable.
SV0021–SV0023	Power-supply overcurrent	Check incoming power, power supply module, regenerative load, servo amplifiers, and motor/cable shorts.
SV0024	Power-supply soft thermal	Load higher than rating. Reduce duty/load and check cooling.
SV0025–SV0027	DC link overvoltage	Check input voltage, regen resistor, deceleration settings, regenerative circuit, and power supply.
SV0028–SV0030	DC link low voltage	Check incoming power, contactor, power supply, fuses, DC bus, and brownouts.
SV0031–SV0034	Power-supply parameter, control-axis, or hardware error	Verify PS parameters and amplifier configuration; suspect PS hardware if parameters are correct.
SV0301 / SV0302	APC communication/overtime error	Check absolute pulse coder, encoder cable, servo interface module, connector, and battery state.
SV0365–SV0369	Built-in pulse coder errors	Check motor encoder, feedback cable, shielding, connector contamination, and electrical noise.
SV0380–SV0387	Separate detector / external scale errors	Check linear scale, separate detector cable, scale head, contamination, power, grounding,

		and scale manufacturer documentation.
SV0401	V-ready off	Check amplifier power, emergency-stop/servo-ready chain, MCC/contactor, drive alarms, power supply, and companion SV alarms.
SV0403	Axis-control card / servo software mismatch	Verify correct axis card, servo software, and configuration after board/software replacement.
SV0404	V-ready on when it should be off	Check amplifier ready circuit, axis card, and servo enable sequence.
SV0407 / SV0410 / SV0411	Excess error, stop or moving	Axis position deviation too large. Check mechanical binding, crash damage, brake, lubrication, servo tuning, acceleration, following error, encoder, and motor.
SV0415	Motion value overflow	Commanded velocity exceeds travel velocity limit. Check rapid/feed, units, scaling, and post.
SV0417	Illegal digital servo parameter	Check motor model, direction, feedback counts, and diagnosis data; restore known-good servo parameters.
SV0420–SV0423	Sync torque or torque-control excess	Check synchronized-axis torque sharing, torque control parameters, friction, and binding.
SV0430	Servo motor overheat	Reduce load/duty cycle; check motor fan if present, mechanical drag, brake, cable, and thermal sensor.
SV0431–SV0439	Power-supply overload, low voltage, soft thermal, overcurrent, abnormal current, DC-link overvoltage	Check incoming power, DC bus, motor/cable shorts, regen, cabinet cooling, and PS/SV modules.
SV0440	Excess regeneration	Reduce deceleration load, check regen resistor/circuit, and verify power supply sizing.

SV0441	Abnormal current offset	Suspect amplifier current-detection circuit; check amplifier hardware.
SV0442	Pre-charge failure	Check power input, pre-charge circuit, contactor, DC bus, fuses, and power supply module.
SV0443 / SV0444	Power-supply or servo internal fan failure	Replace failed fan or module fan assembly; clean filters and check cabinet temperature.
SV0445 / SV0446 / SV0447	Pulse coder or separate detector disconnect	Check feedback cable, connector, encoder, separate detector, and cable flex points.
SV0448	Feedback mismatch	Built-in pulsecoder and external detector signs disagree. Check scale direction, parameter polarity, wiring, and feedback configuration.
SV0460	FSSB disconnect	Check FSSB optical cable, amplifier power, low-voltage alarm, connector seating, and FSSB chain.
SV0462 / SV0463	FSSB CNC/slave data transfer failed	Check optical cable routing, amplifier connection, noise, and FSSB configuration.
SV0465	Amplifier ID data read failed	Check amplifier power, FSSB, amplifier ID, and module hardware.
SV0466	Motor/amplifier combination error	Motor current rating and amplifier rating/configuration mismatch. Verify motor model, amplifier type, and parameters.
SV0474 / SV0475	Servo-detected excess error at stop/move	Same as following-error checks: mechanics, brake, encoder, tuning, acceleration, and load.
SV0488	MCC self-test overtime	Check MCC contactor and servo safety circuit.

SV0489 / SV0490 / SV0494 / SV0496	Safety parameter/function/speed/axis-data errors	Check DCS/safety parameters, safety speed limits, amplifier configuration, and perform required power-cycle procedure.
SV0498	Axis number not set	Power off/on after amplifier/axis configuration; verify axis assignment parameters.
SV0600–SV0607	DC-link overcurrent, fan, overheat, IPM, communication, regen, input power	Check power supply, servo module cooling, radiator fan, input power, regen load, and PS/SV module communication.
SV1025 / SV1026	V-ready during initialization / illegal axis arrangement	Check parameter 1023 axis numbering, duplicate servo axis numbers, and amplifier configuration.
SV1070–SV1072	Excess error during servo-off, moving, or stop	Check gravity axis/brake, servo-off drift, mechanical load, position deviation settings, and encoder feedback.
SV5134 / SV5136 / SV5137 / SV5139 / SV5197 / SV5311	FSSB open-ready timeout, insufficient amps, configuration error, optical/connection error, open timeout, illegal connection	Check FSSB setting screen, amplifier count, optical cables, amplifier order, HRV/current-loop compatibility, and axis-card condition.

Absolute pulse coder, battery, reference-return, and DS alarms

The DS alarm family includes many “other” alarms, including synchronization, malfunction-prevention, reference-return, APC battery, fan, power, parameter, and DCS-related alarms. FANUC’s manual specifically lists DS0300 as needing reference return, DS0306–DS0308 as APC battery alarms, and DS0405 as a zero-return endpoint issue.

Code	Description	Troubleshooting advice
DS0001 / DS0002	Synchronization excess error	Check master/slave axis sync parameters, coupling, scale feedback, and mechanical alignment.

DS0003	Synchronize adjust mode	Informational/condition alarm. Finish or cancel sync adjustment per builder procedure.
DS0004 / DS0005	Maximum feedrate or acceleration exceeded	Reduce feed/rapid/acceleration command or correct parameters/post output.
DS0014 / DS0015	Tool-change detected machine lock or mirror image	Turn off machine lock/mirror image before tool change or follow builder recovery.
DS0020	Reference return incomplete	Return the required angular/perpendicular axis to reference in the correct sequence.
DS0022	Dual Check Safety not worked	DCS disabled or not executed. Check DCS parameter state and safety configuration.
DS0050	Too many simultaneous axes	Reduce simultaneous axis command or verify option/configuration.
DS0059	Specified program/sequence/workpiece/tool data not found	Check program number, sequence number, tool data, or workpiece number.
DS0131–DS0133	External operator/alarm message display errors	Too many messages, missing message number, or external message number out of range. Check ladder/macro alarm logic.
DS0300	APC alarm: need reference return	Absolute position association is required. Handle companion alarms first, then perform reference return.
DS0306	APC battery voltage zero	Absolute position data may be lost. Replace battery with machine powered on, check cable, then re-reference.
DS0307 / DS0308	APC battery low	Replace the absolute pulse coder battery with machine powered on.
DS0309	APC reference return impossible	Follow manual procedure; may require motor rotation and power cycle before setting zero.
DS0310	Not on return point	Recovery return position not reached. Check machine lock, mirror image, and repeat recovery after reset.

DS0405	Zero return end not on reference	Start farther from zero, check decel dog, voltage, pulsecoder, and return speed.
DS0608–DS0613	Servo/PS fan, overload, or input power alarms	Check cooling fans, power supply fans, cabinet filters, input power, and load.
DS1150	A/D converter alarm	Check analog input hardware, board, wiring, and related sensor.
DS1448 / DS1449	DCS/reference-mark parameter mismatch	Check linear-scale reference mark parameters and actual scale configuration.
DS1450	Zero return not finished	Perform manual reference return before the commanded operation.
DS1931	Machine parameter incorrect	Review machine-configuration parameters; restore backup or contact MTB/FANUC.
DS1933	Need reference return after sync/mix/overlay displacement	Perform manual reference return.
DS5340	Parameter checksum error	Parameters changed; restore original parameters or set a new standard checksum after verifying.
DS5550	Axis immediate stop	Identify why the immediate-stop input/function activated: safety, interlock, ladder, or axis condition.

Spindle and rigid-tapping alarms

FANUC distinguishes general CNC spindle alarms such as rigid-tapping, spindle positioning, serial-spindle communication, and safety errors from **serial spindle amplifier alarms** such as `SP9001`, `SP9002`, etc. The manual lists `SP0740+`, `SP1220+`, and many `SP19xx` spindle-control/communication alarms.

Code	Description	Troubleshooting advice
SP0740	Rigid tap excess error, spindle stopped	Check spindle orientation, encoder, rigid tapping parameters, tap load, spindle gain, and feed/spindle synchronization.

SP0741	Rigid tap excess error, spindle moving	Reduce tapping load, check tap condition, spindle acceleration, encoder, servo/spindle tuning, and feedrate.
SP0742	Rigid tap LSI overflow	Check spindle position loop, encoder, gain, and rigid-tap parameters.
SP0752	Spindle mode change error	Mode change did not complete between Cs, spindle positioning, rigid tapping, and spindle control. Check spindle amplifier response and ladder sequence.
SP0754	Abnormal torque	Excess spindle load. Check tool, cut, spindle bearings, belt, gearbox, motor, and amplifier.
SP0755	Spindle safety function error	Check safety monitoring, DCS/safety parameters, and spindle safety feedback.
SP0756	Illegal spindle data	Check spindle amplifier configuration and spindle number assignment after module changes.
SP0757	Safety speed over	Spindle exceeded safety speed during safety monitoring. Check safety-speed parameters and actual command.
SP1202	Spindle select error	Multi-spindle selection invalid. Check spindle select signals, position coder select, and spindle availability.
SP1220	No spindle amplifier	Serial spindle amplifier disconnected or cable broken. Check power and serial spindle cable.
SP1221	Illegal motor number	Spindle number and motor number mismatch. Correct spindle/motor parameters.
SP1224	Illegal spindle-position-coder gear ratio	Correct position-coder gear ratio parameters.
SP1225–SP1228	Serial spindle CRC/framing/receive/communication error	Check CNC-to-spindle cable, shielding, routing away from power cables, connectors, and amplifier.

SP1229	Communication error between serial spindle amplifiers	Check inter-amplifier communication cable and amplifier order.
SP1231 / SP1232	Spindle excess error, moving or stop	Check spindle encoder/position coder, orientation, load, gain, belt, and spindle positioning parameters.
SP1233 / SP1234	Position coder overflow / grid shift overflow	Check position coder feedback, gain, grid-shift value, and orientation parameters.
SP1240	Disconnect position coder	Check analog spindle position coder and cable.
SP1241	D/A converter error	Check analog spindle D/A hardware and board.
SP1243	Illegal spindle gain parameter	Correct spindle position-gain parameter.
SP1244	Motion value overflow	Check spindle positioning command and distribution amount.
SP1245–SP1247	Spindle communication data error	Check serial spindle communication, cables, and spindle-control software state.
SP1700	Spindle safety parameter error	Check n-th spindle safety parameters.
SP1969–SP1999	Spindle-control or serial-spindle communication/control errors	Check spindle software, serial spindle setup, amplifier number, parameters, and CNC/spindle amplifier hardware.
SP1996	Illegal spindle parameter setting	Check spindle assignment parameters such as spindle number/motor assignment.

Serial spindle amplifier alarm family: SP9001+

For serial spindle alarms, FANUC's manual notes that the spindle amplifier indication differs depending on whether the red or yellow LED is on: with the red LED, the amplifier indicates a 2-digit serial spindle alarm number; with the yellow LED, it indicates a sequence/problem code. The manual also says to refer to the appropriate FANUC AC spindle/servo amplifier maintenance manual for serial spindle alarm numbers not listed.

CNC alarm	Amp display	Description	Troubleshooting advice
SP9001	01	Motor overheat	Reduce load/duty cycle, check ambient temperature, cooling fan, air flow, spindle motor temperature sensor.
SP9002	02	Speed deviation	Motor cannot follow commanded speed. Reduce cut load, check acceleration/deceleration parameter, belt/gearbox, and spindle feedback.
SP9003	03	DC-link fuse broken	Check spindle amplifier, motor insulation, DC link, and possible ground fault.
SP9004	—	Power supply improper input power	Check incoming power, phase balance, power supply module, and line voltage.
SP9006	06	Thermal sensor disconnect	Check parameter, motor feedback cable, thermal sensor circuit, and connector.
SP9007	07	Overspeed	Check spindle sequence, spindle synchronization, orientation, speed command, and feedback polarity.
SP9009	09	Main circuit overheat	Improve heat-sink cooling, check spindle amplifier fan, filters, cabinet temperature, and load.
SP9010	10	Low input power	Check input voltage to spindle amplifier, cables, and control PCB.
SP9011	—	Power-supply DC-link overvoltage	Check PS selection, input voltage, regen during decel, line impedance, and regenerative circuit.
SP9012	12	Power-circuit overcurrent	Check motor insulation, spindle parameters, motor cable, and spindle amplifier.
SP9013	13	CPU data memory fault	Suspect spindle amplifier control PCB.
SP9014	14	Software series mismatch	Verify correct spindle software for the amplifier.
SP9015	15	Spindle switching fault	Check ladder sequence, gear/range change, switching contactor/MCC, and speed-range feedback.
SP9018	18	Program ROM checksum error	Suspect spindle amplifier control PCB/software.

SP9019 / SP9020	19 / 20	U/V current offset error	Suspect spindle amplifier current detection circuit.
SP9021	21	Position sensor polarity error	Check spindle position sensor polarity parameters and wiring.
SP9022	22	Spindle amplifier overcurrent	Reduce acceleration/cutting load, check parameters, motor cable, and amplifier.
SP9024	24	Serial transfer error	Route CNC-to-spindle cable away from power cables; inspect or replace cable.
SP9027	27	Position coder disconnect	Check spindle position coder cable, connector, and encoder.
SP9029	29	Overload	Excess load for too long or motor shaft locked. Reduce load and check mechanical spindle drive.
SP9030	—	Power-supply overcurrent	Check input voltage, phase balance, PS sizing, and PS module.
SP9031	31	Motor lock	Check spindle load, belt/gearbox, seized spindle, motor sensor cable, and rotation command.
SP9032	32	SIC-LSI RAM fault	Suspect spindle amplifier control PCB.
SP9033	—	Power-supply pre-charge failure	Check input power, open phase, charging resistor, contactor, and PS module.
SP9034	34	Illegal parameter	Correct spindle motor parameters; compare to backup and motor model.
SP9036	36	Error counter overflow	Check spindle position gain and position loop.
SP9037	37	Illegal velocity-detector setting	Correct speed detector pulse-count parameter.
SP9041	41	Illegal one-revolution signal of position coder	Check position coder parameter, JYA3 cable, one-rev signal, and encoder.

The troubleshooting actions above follow the same themes as FANUC's serial spindle table: for example, SP9001 points to temperature/load/fan checks, SP9002 to load and acceleration/deceleration, SP9012 to motor insulation and spindle parameters, SP9024 to cable routing/replacement, and SP9034 to correcting spindle parameters.

Overheat and cooling alarms

FANUC lists `OH0700` as CNC cabinet overheat, `OH0701` as PCB cooling fan abnormality, and `OH0704` as spindle overheat, with advice to reduce cutting load, check for dull tools, and check the spindle amplifier.

Code	Description	Troubleshooting advice
OH0700	Cabinet / locker overheat	Check cabinet fan, heat exchanger, filters, ambient temperature, blocked vents, and cabinet doors/seals.
OH0701	PCB cooling fan motor stopped	Replace failed CNC/PCB fan; check fan alarm input and power.
OH0704	Spindle overheat	Reduce cutting load, check dull tool, spindle bearings, spindle motor fan/cooling, and spindle amplifier.

PMC, ladder, and machine-builder alarms

Many alarms on FANUC-equipped machines are generated by the **PMC ladder** rather than by the CNC kernel. These include door, chuck, turret, tool changer, hydraulic, lubrication, pallet, coolant, bar feeder, robot, probe, and safety-interlock messages. FANUC's manual includes PMC alarm messages such as program data error, program size over, PMC type mismatch, and I/O Link alarms; it also references external alarm/operator messages and notes that external alarm/message numbers can range from 0 to 4095 in that mechanism.

Code / family	Description	Troubleshooting advice
ER01	PMC program data error	Reload/verify ladder/sequence program. If repeated, suspect PMC memory or hardware.
ER02 / ER03	PMC program size over / option size error	Ladder exceeds permitted size. Use correct PMC option or reduce ladder size.
ER04	PMC type mismatch	Ladder does not match PMC type/control. Load correct ladder for the machine.
PC057	I/O Link safety I/O alarm	Check I/O Link safety unit, cable, unit address, safety I/O hardware, and replace failed unit if confirmed.
PC058	I/O Link slave LSI external alarm	Check the indicated I/O Link slave, external alarm status, wiring, and module health.
External alarms /	Machine-tool-builder alarms from ladder or macro	Read the exact message. Use the machine builder manual first, not a generic FANUC list. Check relevant switch/sensor/solenoid/interlock.

machine alarms		
Macro alarms from `#3000` / messages from `#3006`	User macro generated alarm or message	Search the running macro/program for the alarm number/message and correct the process condition that triggered it.
Common `1000+` or builder-specific numbers	Tool changer, hydraulic, chuck, turret, coolant, lube, door, APC, robot, bar feeder, etc.	Troubleshoot by function: sensor state, air/hydraulic pressure, solenoid output, ladder diagnostics, interlock chain, and builder recovery procedure.