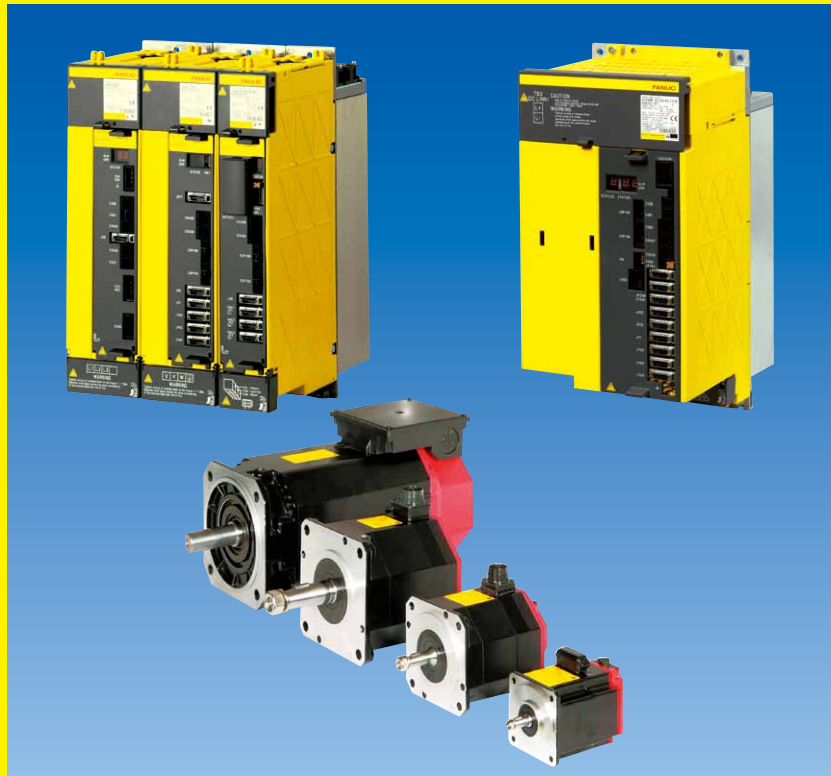


FANUC

α *i*-B series SERVO

β *i*-B series SERVO



High Speed, High Precision and High Efficiency Nano Control Servo

FANUC AC SERVO MOTOR αi -B/ βi -B series

FANUC AC SPINDLE MOTOR αi -B/ βi -B series

FANUC SERVO AMPLIFIER αi -B/ βi -B series

αi -B and βi -B series SERVO are high speed, high precision and high efficiency intelligent servo system to make machine tools high performance, compact and energy saving.

Nano

Servo motor with ultra

Super high resolution
32,000,000/rev.

Servo amplifier with
current detector

High speed and high
SERVO HRV Control

High Speed, High Efficiency

Spindle motor enables high speed
and high acceleration

High response and high efficiency
with SPINDLE HRV Control

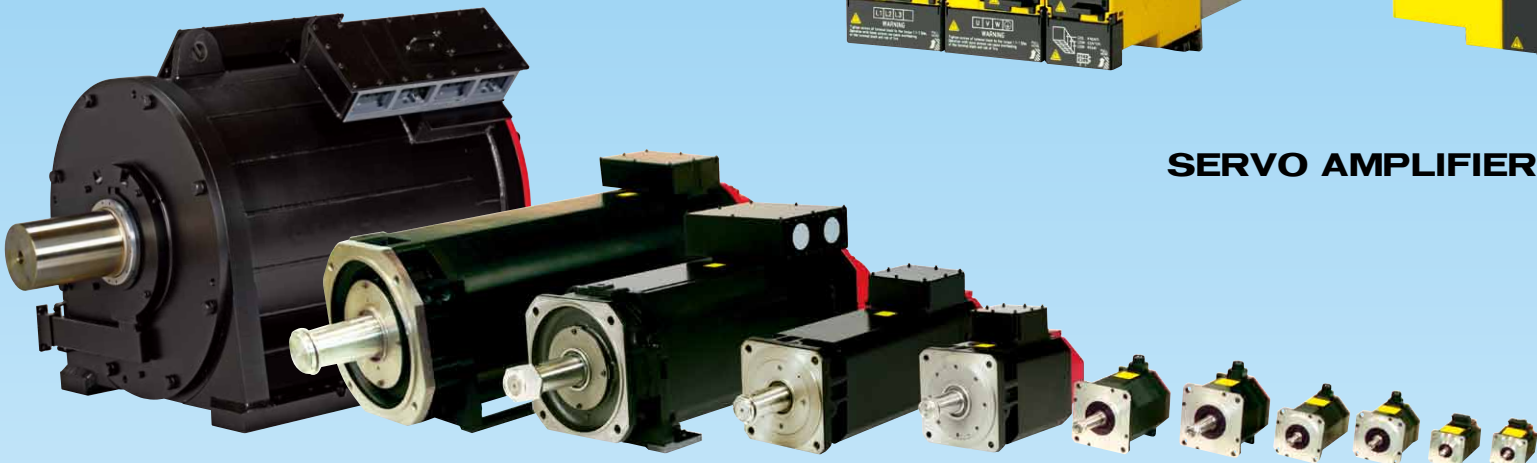
Full Line-up

Full line-up from small to
large scale models

Full line-up with both 200V
and 400V input



SERVO AMPLIFIER



AC SERVO MOTOR αi -B/ βi -B series

es ries ies

Control

- smooth rotation
- Pulsecoder with
- high precision
- precision with

Compact and Reduced Wiring

- Servo and spindle motor with shorter length
- Compact and space saving servo amplifier

Enhanced Maintenance

- Trouble prediction function enabling preventive maintenance
- Simple maintenance structure and various diagnostic functions for quick recovery



α i-B/ β i-B series



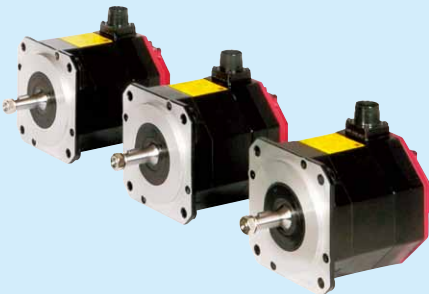
AC SPINDLE MOTOR α i-B/ β i-B series

Compact, Reduced Wiring and Easy Maintenance

FANUC SERVO AMPLIFIER α i-B series/ β i-B series



FANUC AC SERVO MOTOR α i-B series/ β i-B series



FANUC AC SPINDLE MOTOR α i-B series/ β i-B series



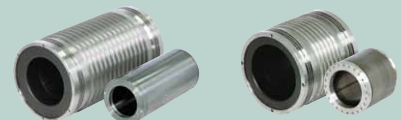
FANUC LINEAR MOTOR LiS-B series



FANUC SYNCHRONOUS BUILT-IN SERVO MOTOR DiS-B series



FANUC BUILT-IN SPINDLE MOTOR BiI-B series/BiS-B series



Servo Motor

for feed axis of machine tools and industrial machines

FANUC AC SERVO MOTOR *αiS-B series/αiF-B series*

High performance AC SERVO MOTOR

- **Machining Performance**

Excellent torque characteristics enables quick acceleration to high-speed range to reduce the cycle time.

32,000,000/rev. or 4,000,000/rev. Pulsecoder and the special magnetic pole shape which minimizes torque ripples and the latest servo control HRV⁺ enable extremely smooth motor rotation which realize high-precision, and high-quality machining.

Large torque up to 18000Nm and large output up to 500kW are available with "Multi amplifiers drive technology" . Further output is enabled by driving one axis with "Multi motors drive technology" . Suitable for large machine tools, electric drive of press machines, injection molding machines.

- **Minimizing Downtime**

FANUC's unique seal structure provides excellent waterproofing.

Waterproof grade IP67 option available.

- **Ease of Use**

Various models with either 200V input or 400V input are available. Flexible selection is possible depending on the input voltage of the delivery area.

Battery less Pulsecoder that does not require a backup battery can be selected.

One-touch connector enables easy connecting and disconnecting of power connector.

Backlash reduction brake option available.

FANUC AC SERVO MOTOR *βiS-B series/βiF-B series*

Enough performance and value AC SERVO MOTOR

- **Machining Performance**

1,000,000/rev. Pulsecoder and the special magnetic pole shape which minimizes torque ripples and the latest servo control HRV⁺ enable extremely smooth motor rotation.

- **Minimizing Downtime**

FANUC's unique seal structure provides excellent waterproofing.

Waterproof grade IP67 option available.

- **Ease of Use**

Various models with either 200V input or 400V input are available. Flexible selection is possible depending on the input voltage of the delivery area.

Battery less Pulsecoder that does not require a backup battery can be selected.

One-touch connector enables easy connecting and disconnecting of power connector.

Backlash reduction brake option available.



Spindle Motor

for spindles of machine tools

FANUC AC SPINDLE MOTOR

αiI-B series / αiIP-B series / αiIT-B series / αiIL-B series / αiS-B series

High performance AC SPINDLE MOTOR

- **Machining Performance**

Optimum winding design and effective cooling structure enables power up to high speed and quick acceleration. Improving short-time heavy cutting and reducing acc./dcc. time by adding short-time rated output and torque. S6 short-time rated output equal to S3 are available due to FANUC original spindle control.

As for hollow shaft model for center through coolant, air-cooled *αiIT-B* series and liquid-cooled *αiIL-B* series are available. Suited to direct connecting by high mechanical precision and low vibration.

For large size machine tool, large output up to 200kW and large torque up to 2000Nm are available with "Multi amplifiers drive technology". Further output is enabled by driving one axis with "Multi motors drive technology".

For quick and frequent acc./dcc., synchronous spindle motors are available. Also, spindle motors for lathe with increased allowable radial load are available.

- **Minimizing Downtime**

Application of oil-seal provides excellent waterproofing.

- **Ease of Use**

Various models with either 200V input or 400V input are available. Flexible selection is possible according to the input voltage of the delivery area.

The spindle balance connection is possible at the rear of the motor after the motor is coupled to the spindle.

FANUC AC SPINDLE MOTOR

βiI-B series / βiIP-B series / βiIT-B series

Enough performance and value AC SPINDLE MOTOR

- **Machining Performance**

Optimum winding design and effective cooling structure enables high power and large torque with compact size.

Improving short-time heavy cutting and reducing acc./dcc. time by adding short-time rated output and torque.

S6 short-time rated output equal to S3 are available due to FANUC original spindle control.

As for hollow shaft model for center through coolant, air-cooled *βiIT-B* series are available with enough mechanical precision and low vibration for direct connection to machine spindle.

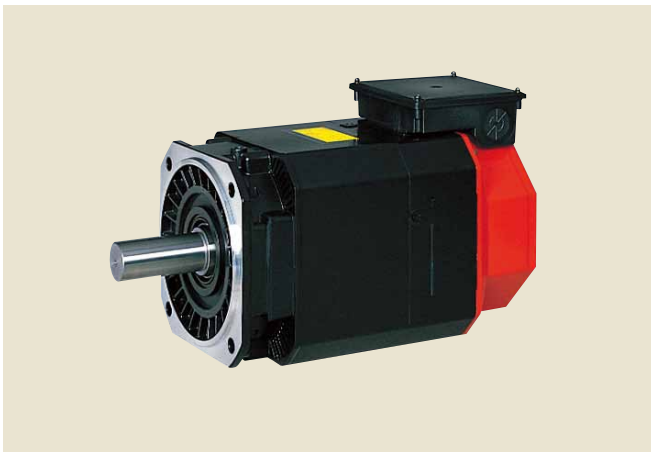
- **Minimizing Downtime**

Application of oil-seal provides excellent waterproofing.

- **Ease of Use**

Various models with either 200V input or 400V input are available. Flexible selection is possible according to the input voltage of the delivery area.

The spindle balance connection is possible at the rear of the motor after the motor is coupled to the spindle.



Servo Amplifier

Amplifier to Drive Servo Motor and Spindle Motor

FANUC SERVO AMPLIFIER α iSV-B series/ α iSP-B series/ α iPS-B series

Highly functional SERVO AMPLIFIER with wide variety lineup from small to large capacity

- **Machining Performance**

Short-time machining and high-precision/high-quality machining can be achieved using high-power and high-precision current control.

- **Minimizing Downtime**

Built-in leakage detection function can detect insulation deterioration in motors used under the harsh environments caused by coolant.

Fan motor can be exchanged from front easily.

Troubleshooting functions make it easier to find causes of alarms.

- **Ease of Use**

The servo amplifier meets the needs of a wide variety of current capacities.

External magnetic contactor for cutting power can be eliminated by using the Safe Torque Off function (STO).

The latest low loss power devices are employed for further energy saving.

Various models with either 200V input or 400V input are available.

Flexible selection is possible according to the input voltage of the delivery area.



FANUC SERVO AMPLIFIER β iSVSP-B series

Cost-effective all-in-one SERVO AMPLIFIER

- **Machining Performance**

Short-time machining and high-precision/high-quality machining can be achieved using high-power and high precision current control.

- **Minimizing Downtime**

Fan motor can be exchanged from front easily.

Troubleshooting functions make it easier to find causes of alarms.

- **Ease of Use**

Simple wiring is realized by integrating servo function with spindle function.

External magnetic contactor for cutting power can be eliminated by using the Safe Torque Off function (STO) function.

The latest low loss power devices are employed for further energy saving.

Various models with either 200V input or 400V input are available.

Flexible selection is possible according to the input voltage of the delivery area.



Power Failure Backup Module MODEL B

Machine Protection at Power Failure

Damage of work pieces and tools at power failure is prevented in the area where a stable power supply cannot be expected.

- **Gravity-axis drop prevention**

Motor brake is quickly activated using power failure detection method in the standard α iPS-B.

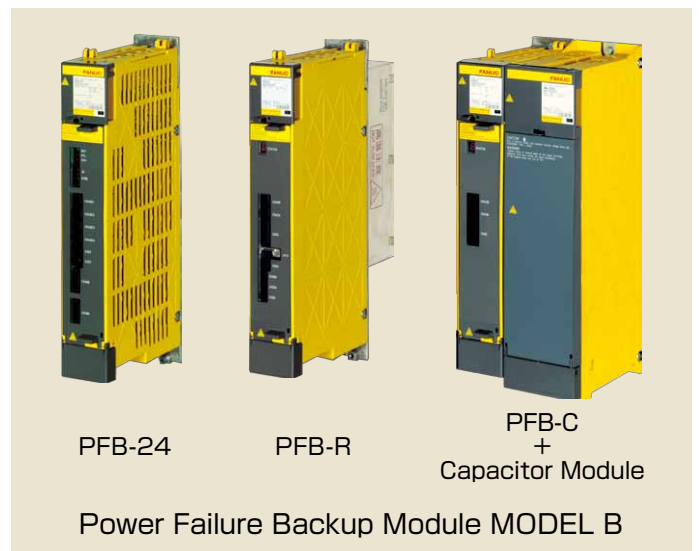
- **Stop distance reduction *1)**

Feed axes are decelerated to stop in order to prevent feed axes to crash in case of high speed machine tools.

- **Retract *2)**

Tool is retracted from work piece keeping synchronization in such case of a gear cutting machine.

*1). *2) "Power Failure Backup Module (Hardware)" or "Power Failure Backup Function (Software)" shall be applied.



PFB-24

PFB-R

PFB-C
+
Capacitor Module

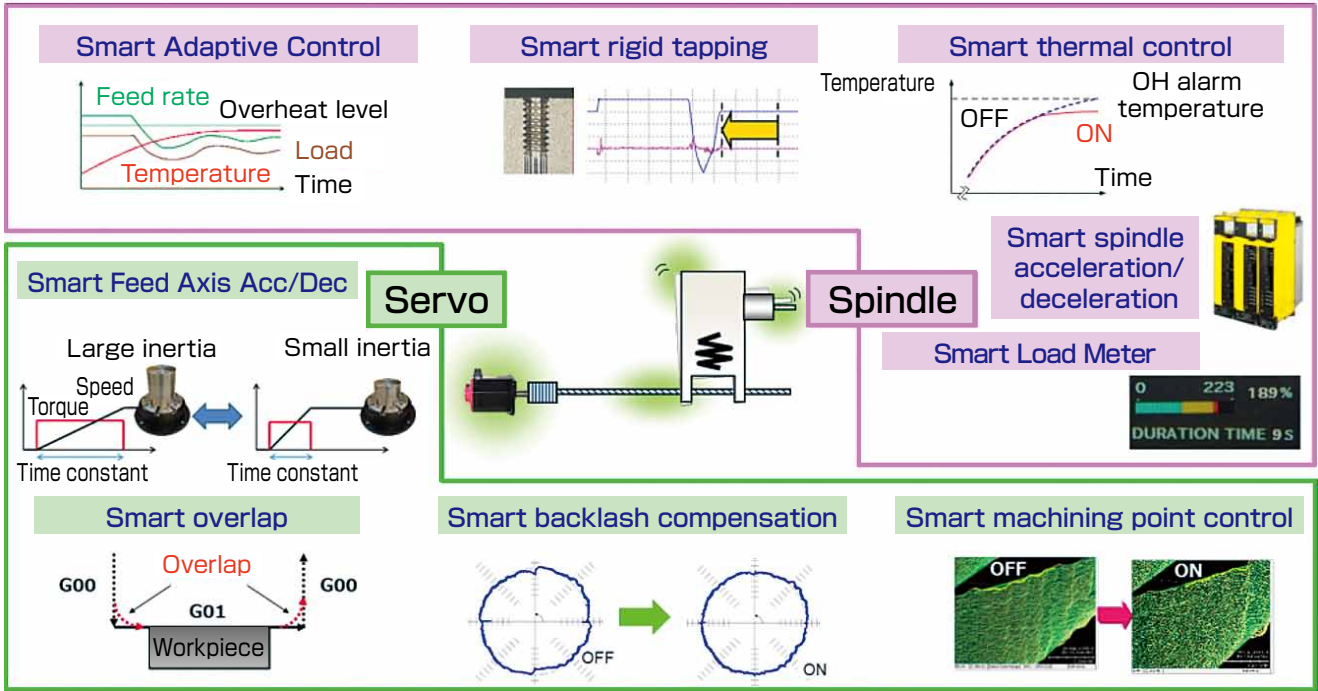
Power Failure Backup Module MODEL B

Machining Performance

Smart Machine Control

Optimizing control in real time

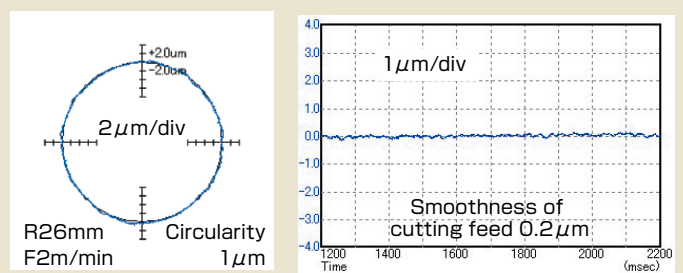
Smart machine control is a group of functions that help machines achieve high-speed, high-precision, and high-quality machining by optimizing control in real time by the control unit itself according to changes of machine conditions such as load, temperature, and position.



SERVO HRV Control

High-speed and high precision servo control

By combining hardware technology and software technology such as the latest servo control HRV+, high-speed and high precision control, at the nano-meter level, can be achieved. Mechanical resonance can be suppressed by automatic following the HRV filter though its frequency changes.

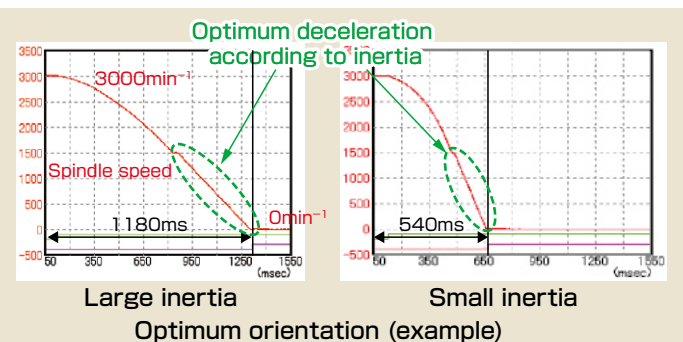


Application example of SERVO HRV+

SPINDLE HRV Control

High response and high efficiency spindle control

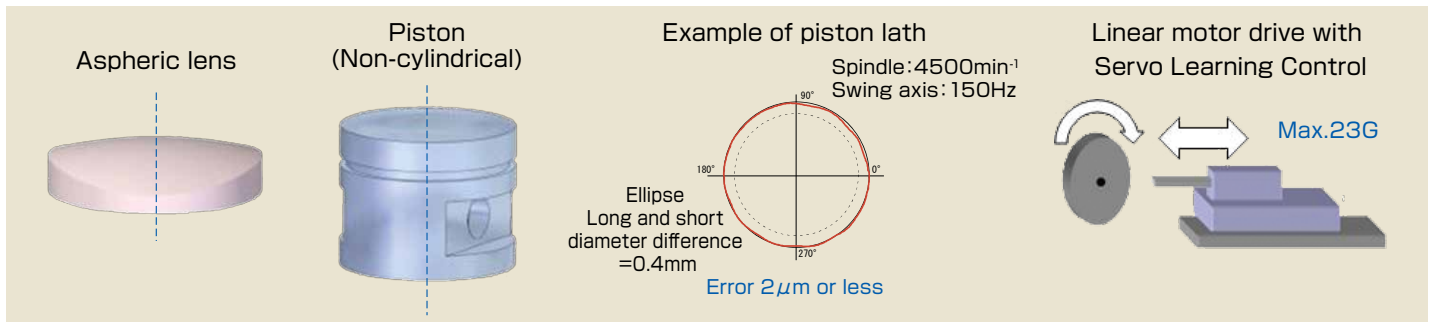
- Provides high gain control and low heat generation at high-speed rotation by fast sampling time of the current control loop
- Optimum orientation using the optimum deceleration level according to the inertia of works or tools
- Supports Nano Interpolation in position control enabling Nano CNC system for spindle as well as feed axis



Servo Learning Control

High-speed and high precision with Servo Learning Control, especially effective in combination with direct drive motor

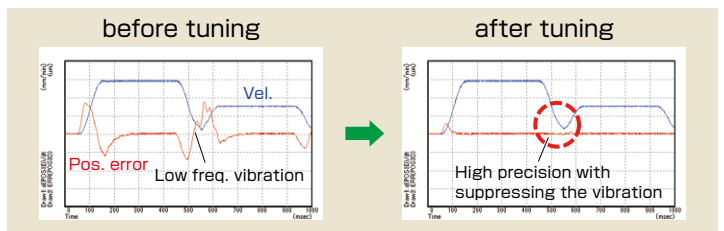
The superior performance of linear motors with the high precision of Servo Learning Control achieves shorter cycle times for aspheric workpieces by turning instead of milling.



AI Servo Tuning

AI Feedforward achieves high response of servo control and suppresses low frequency vibration

AI Feedforward is the high-dimensional feedforward control which can describe the machine characteristics precisely. Application of machine learning to the parameter decision process leads to the advanced feedforward control easily. This function suppresses the low frequency vibration during acc/dec and contributes to the fine surface machining.

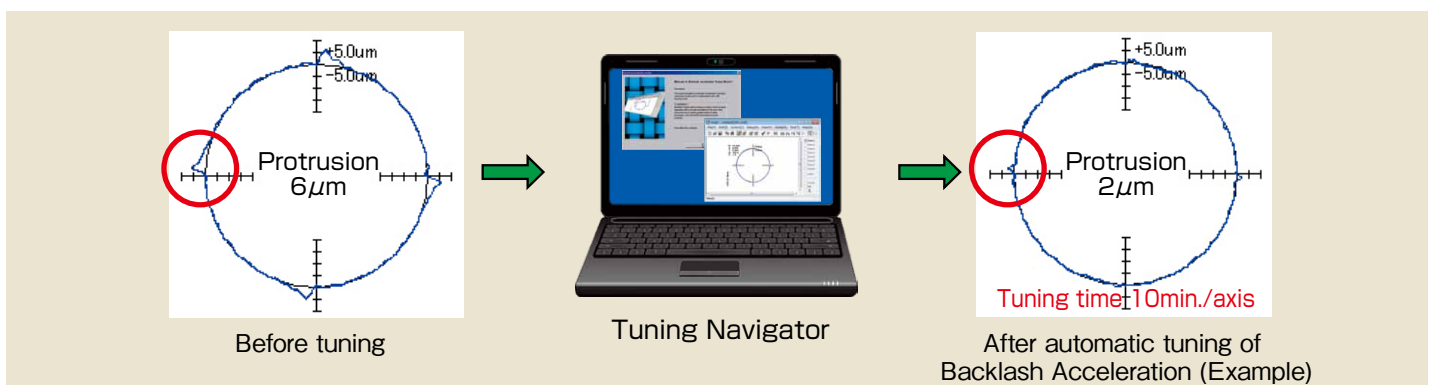
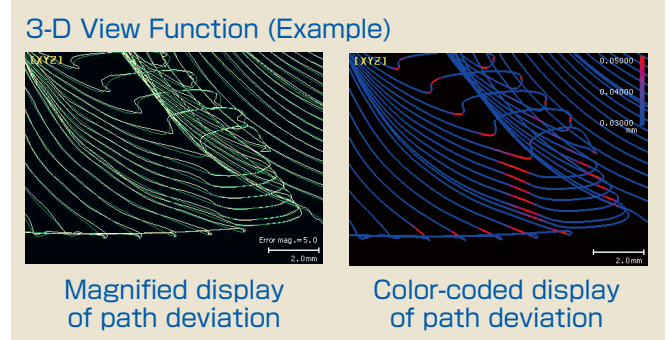


Ease of Use

Servo Tuning Tool FANUC SERVO GUIDE

Integrated tuning tool for Servo and Spindle

SERVO GUIDE is an integrated software solution that supports the test program generating, parameter setting, and data measurement required for servo and spindle tuning. Easy to connect PC to CNC. The 3-D View Function displays tool path deviation for 5-axis machining, and supports magnified display and color-coded display. It makes tuning parameters more efficiently. Tuning Navigator can reduce tuning time by automatic tuning gains, filters, and more. The automatic tuning function for quadrant protrusion can drastically reduce the tuning time for high speed and high precision.



Minimizing Downtime

Reliable

Molded Fan Motor

Improved Cutting Fluid Tolerance

Molded fan motor with printed circuit board and windings covered with resin has a high tolerance to cutting fluid. This can prevent printed circuit board failure due to cutting fluid and help minimize machine downtime.



Rechargeable Battery Unit

Prevention of data loss

Rechargeable Battery Unit eliminates the need for battery replacement in both Pulsecoder and CNC and prevents the loss of parameter or reference point data.

Maintenance cost saving

Eliminating battery replacement will reduce maintenance costs.

Environmentally-friendly

Used battery disposal is not necessary.



Predictable

Trouble Prediction Function

Enable preventive maintenance

By detecting the abnormal sign of the motor, amplifier, fan motor, unexpected machine stop is prevented and preventive maintenance becomes available.

Leakage Detection Function

Leakage detection function measures the insulation resistance of the motor, and detects insulation deterioration.

Capacitor Check Function

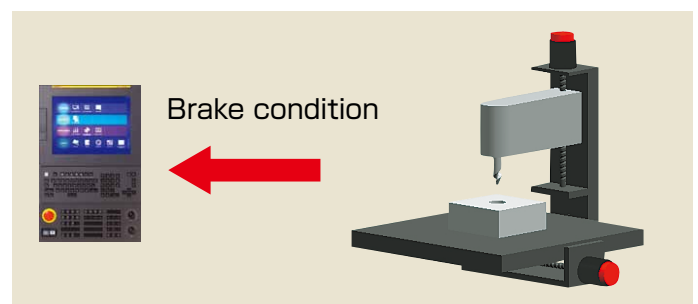
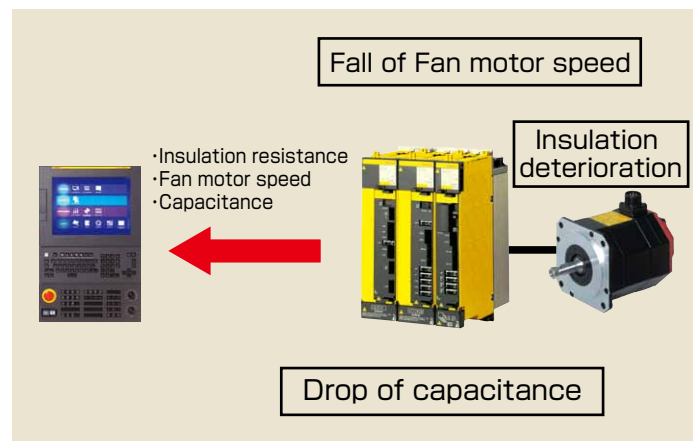
Capacitor check function measures the capacitance for main circuit in servo amplifier, and detects the drop of capacitance.

Fan motor speed detection function

Fan motor speed detection function measures the speed of the fan motor in servo amplifier, and detects the fall of fan motor speed.

Brake check function

The brake check function measures the brake condition and detects a failure of the brake.

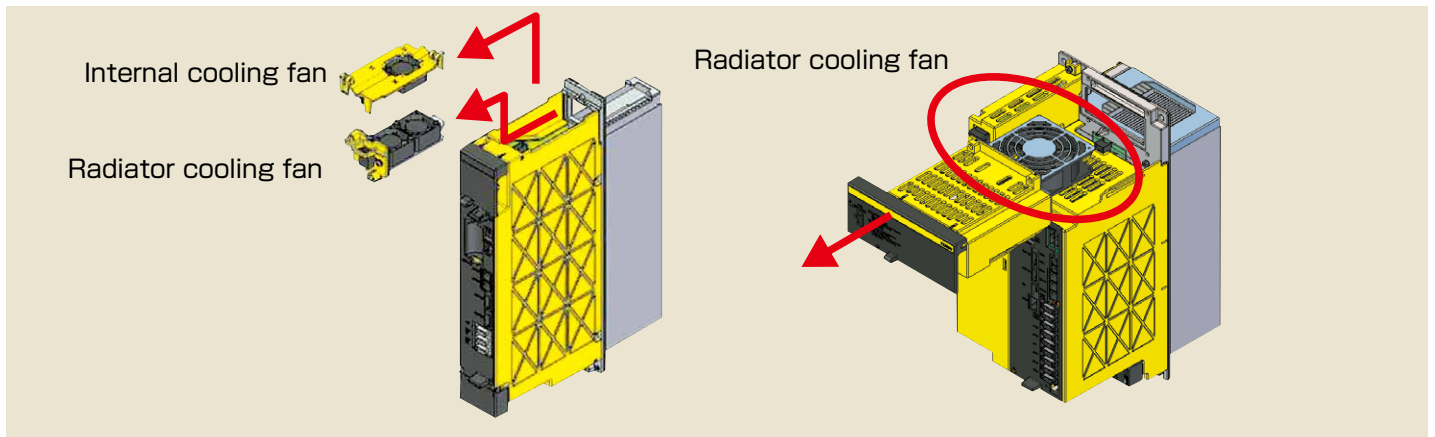


Easy to repair

Quick Replacement of Fan motor

Minimizing repair time

Repair time is shortened by easy access to replace fan motor from front side without removing amplifiers from power magnetics cabinet.



One-touch connector

The power and signal connector of the servomotor can be installed and removed with one touch. It reduces work time during motor maintenance and contributes to improvement of reliability during replacement work.



Trouble Diagnosis Function

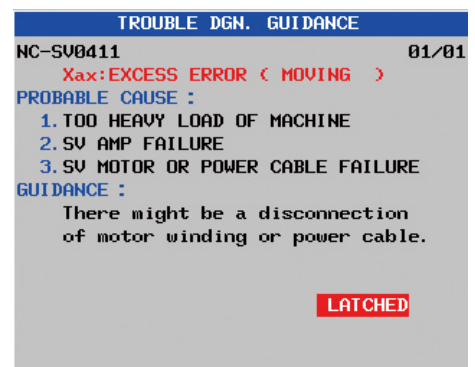
Quick finding cause of alarms

The trouble diagnosis function is prepared in combination with the Series 30i-MODEL B CNC and the Series Oi-MODEL F CNC.

The diagnostic information which is useful for trouble shooting at the time of alarm occurrence can be seen on a CNC screen.

The major features of the trouble shooting function are as follows:

- "Trouble diagnosis guidance" screen for figuring out alarm causes according to the failure diagnosis flow
- "Trouble diagnosis monitor" screen for monitoring the states of servo circuits and spindles during normal operation and enabling data to be latched at alarm occurrence
- "Trouble diagnosis graphic" screen for making it possible to display waveforms observed at the occurrence of a servo or spindle alarm.



Encoder Communication Check Circuit

Quick identification of defective part

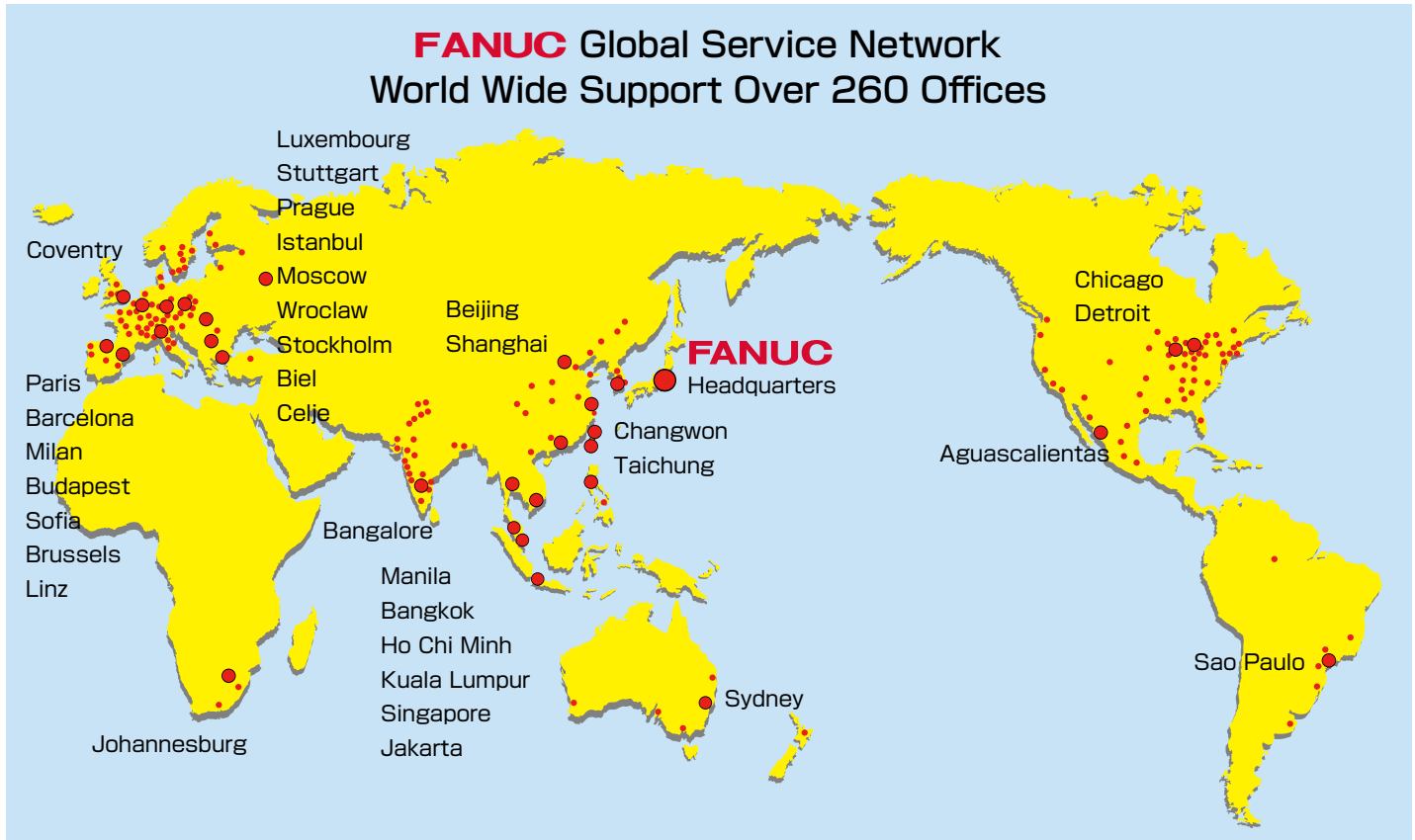
As there are three possible sources at communication alarm of the encoder, which include encoder, feedback cable and servo amplifier, it can take a longer time to identify the source, thereby extending down time. The Encoder Communication Check Circuit outputs compatible signals of the encoder in order to identify the source of the defect quickly.



Maintenance and Customer Support

Worldwide Customer Service and Support

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