MITSUBISHI ELECTRIC
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FACTORY AUTOMATION

New Product Release
June 2024 [SV2406-2E]

# Mitsubishi Electric AC Servo System MELSERVO-J5 Pressure Control Compatible MR-J5-_-LL

MITSUBISHI ELECTRIC SERVO SYSTEM MELSERVO-J5

SSCNET III/H SERVO SYSTEM CONTROLLER NETWORK
MR-J5-B-LL

CC-Link IE TSN
MR-J5-G-LL

Achieves high-speed, high-accuracy and stable pressure control

New product

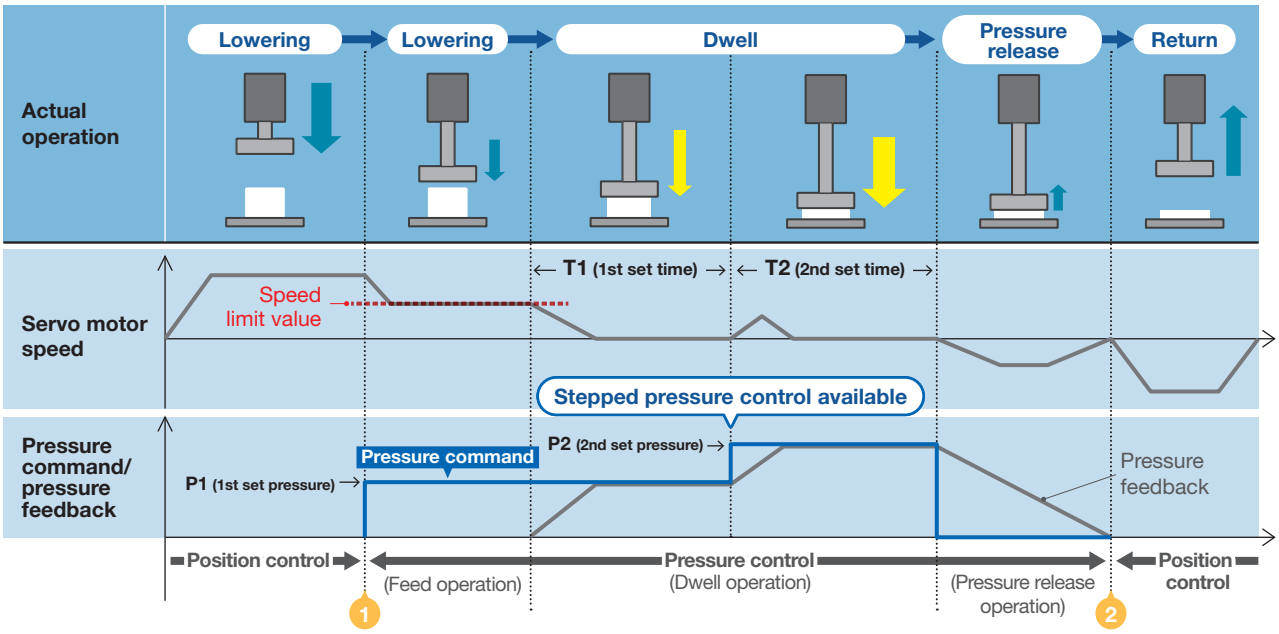
# Achieves high-accuracy, stable pressure control

The analog signal from a pressure sensor (load cell*1) is input to the servo amplifier to control the pressure.
The pressure can be kept constant even while the load is changing.

*1. A force sensor that enables force measurement by converting force into an electrical signal.

## Example of pressure control

1 Switching from position control to pressure control
2 Switching from pressure control to position control



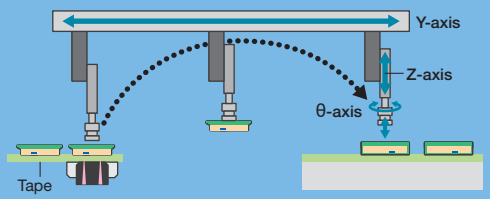

**Enhancements**

- Prevents over-pressing by applying a pressure model to reduce overshoot.
- Shortens the cycle time by reducing the switching time for control (1, 2).
- Improves command trackability with a faster pressure feedback cycle at a minimum of 62.5 µs.

## Application examples

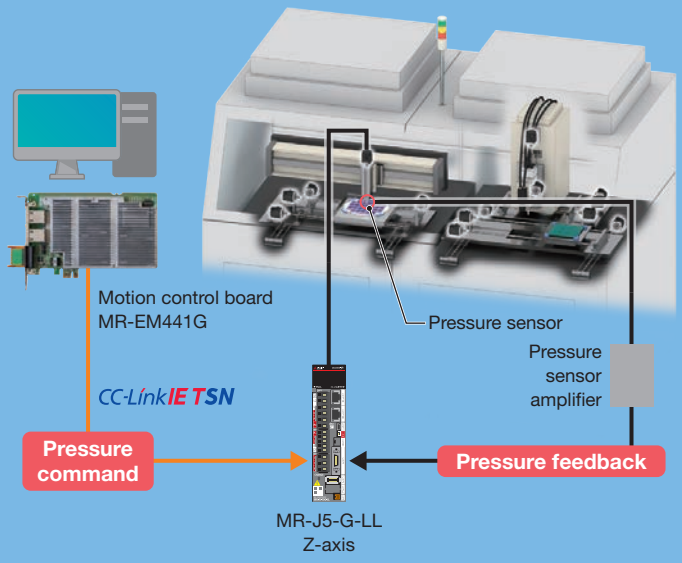
### 1 Bonders

Pressure control maintains proper pressure to achieve uniform bonding and adhesion, improving quality and ensuring reliability.




**Point**

- The capability to drive linear servo motors enhances the performance of the equipment.
- A faster pressure command cycle enables precise pressure control.

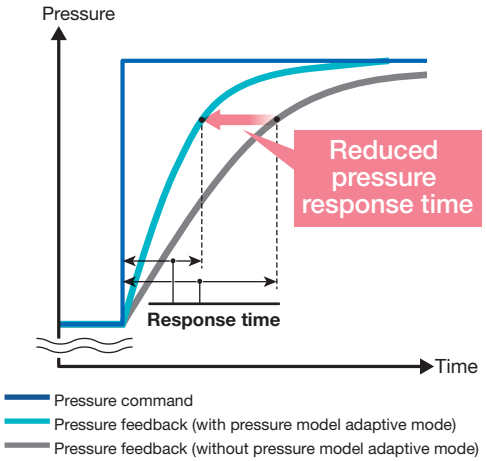


## Added pressure model adaptive mode

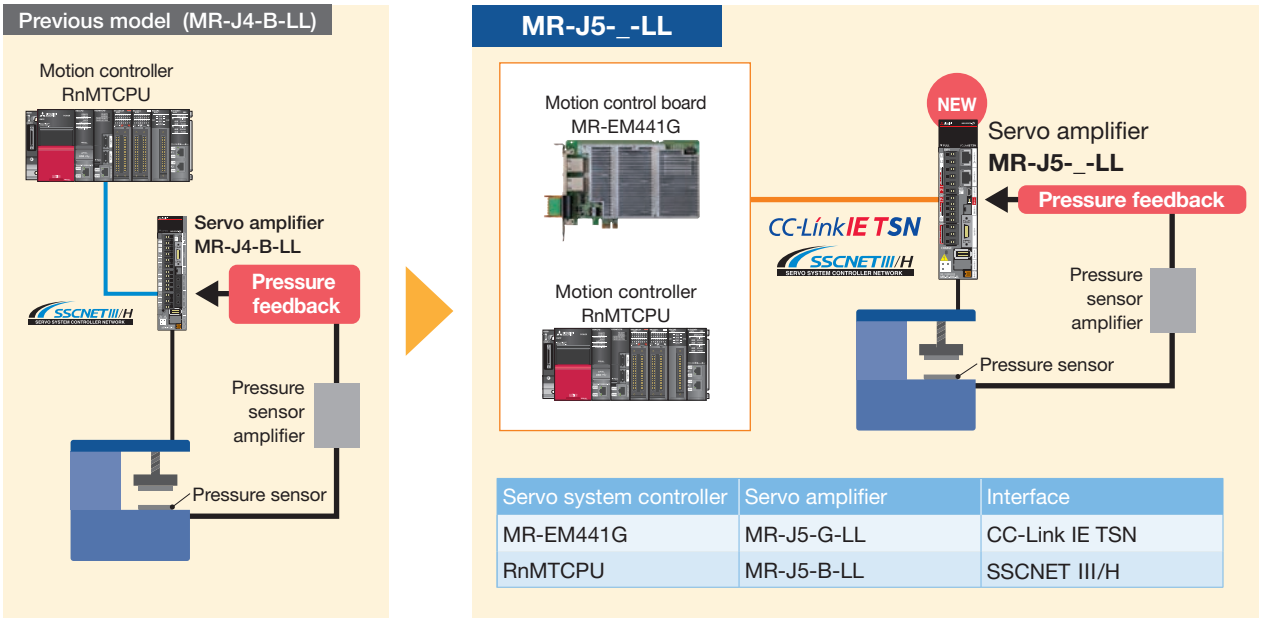
The newly-added feedforward control utilizing a pressure model enables pressure control with high response and reduced overshoot.

**Enhancements**

- Reduces the effects of pressure sensor delay to improve responsivity.
- Prevents over-pressing to improve production efficiency.



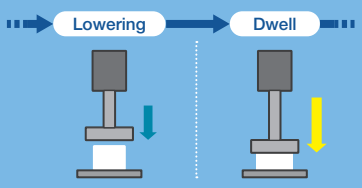

## System configuration example




| Servo system controller | Servo amplifier | Interface |
|---|---|---|
| MR-EM441G | MR-J5-G-LL | CC-Link IE TSN |
| RnMTCPU | MR-J5-B-LL | SSCNET III/H |

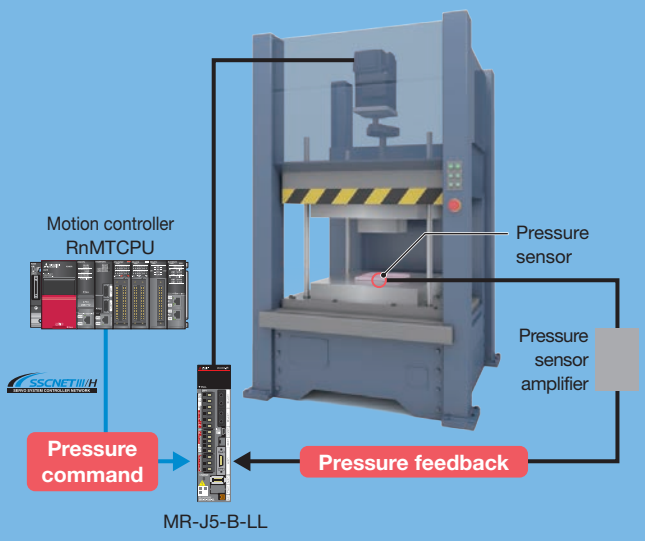
## 2 Press equipment

Pressure control is performed with the pressure sensor signals directly inputted to the servo amplifier, enabling highly responsive pressure control.




**Point**

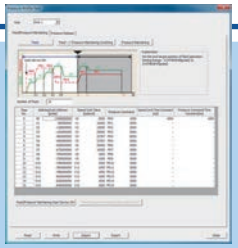
- Motion controller program assets can be utilized.
- With the MR-J5-B-LL servo amplifier and the HK series rotary servo motor, the functionality of the equipment can be enhanced.



# Mitsubishi Electric AC Servo System MELSERVO-J5
# Pressure Control Compatible MR-J5-_-LL

## Settings for pressure commands

The pressure command is configured as a pressure profile using engineering software.
Adjustments for feed, dwell, and pressure release are easily performed.



Pressure profile

## Product specifications*1

| Item | | MR-J5-G-LL NEW | MR-J5-B-LL NEW | MR-J4-B-LL |
|---|---|---|---|---|
| Speed frequency response | | **3.5 kHz** | | 2.5 kHz |
| Position control to pressure control switching time | | **0.5 ms** | | 3.5 ms |
| Input voltage range | | 0 to 10 V | | 0 to 10 V |
| Input A/D resolution | | 16 bits/±11 V | | 16 bits/±11 V |
| Pressure command cycle | | **Minimum 125 µs** | Minimum 222 µs | Minimum 222 µs |
| Pressure feedback cycle | | **Minimum 62.5 µs** | | Minimum 111 µs |
| Pressure control mode | | Basic mode, **pressure model adaptive mode** | | Basic mode |
| Supported servo motors | | Rotary servo motors, **linear servo motors** | Rotary servo motors | Rotary servo motors |
| Number of profile points*2 | Feed | **32 points** | 16 points | 16 points |
| | Dwell | **32 points** | 16 points | 16 points |

*1. Comparison with previous model MR-J4-B-LL
*2. The number of profile points depends on the specifications of the servo system controller.

## Model Designation*3*4

**MR – J5 – 10 – LL**

| Symbol | Rated output [kW] |
|---|---|
| 10 | 0.1 |
| 20 | 0.2 |
| 40 | 0.4 |
| 60 | 0.6 |
| 70 | 0.75 |
| 100 | 1 |
| 200 | 2 |
| 350 | 3.5 |
| 500 | 5 |
| 700 | 7 |

| Symbol | Interface |
|---|---|
| G | CC-Link IE TSN |
| B | SSCNET III/H SERVO SYSTEM CONTROLLER NETWORK |

| Symbol | Power supply |
|---|---|
| None | 3-phase 200 V AC, 1-phase 200 V AC, or DC input |
| 4 | 3-phase 400 V AC |

NEW

| Symbol | Special specifications |
|---|---|
| LL | **Compatible with pressure control** |

*3. This section describes what each symbol in a model name indicates. Some combinations of symbols are not available.
*4. The dimensions are the same as those of MELSERVO-J5 series servo amplifiers.

e-F@ctory

Mitsubishi Electric's e-F@ctory concept utilizes both FA and IT technologies, to reduce the total cost of development, production and maintenance, with the aim of achieving manufacturing that is a "step ahead of the times". It is supported by the e-F@ctory Alliance Partners covering software, devices, and system integration, creating the optimal e-F@ctory architecture to meet the end users needs and investment plans.

e-F@ctory Alliance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