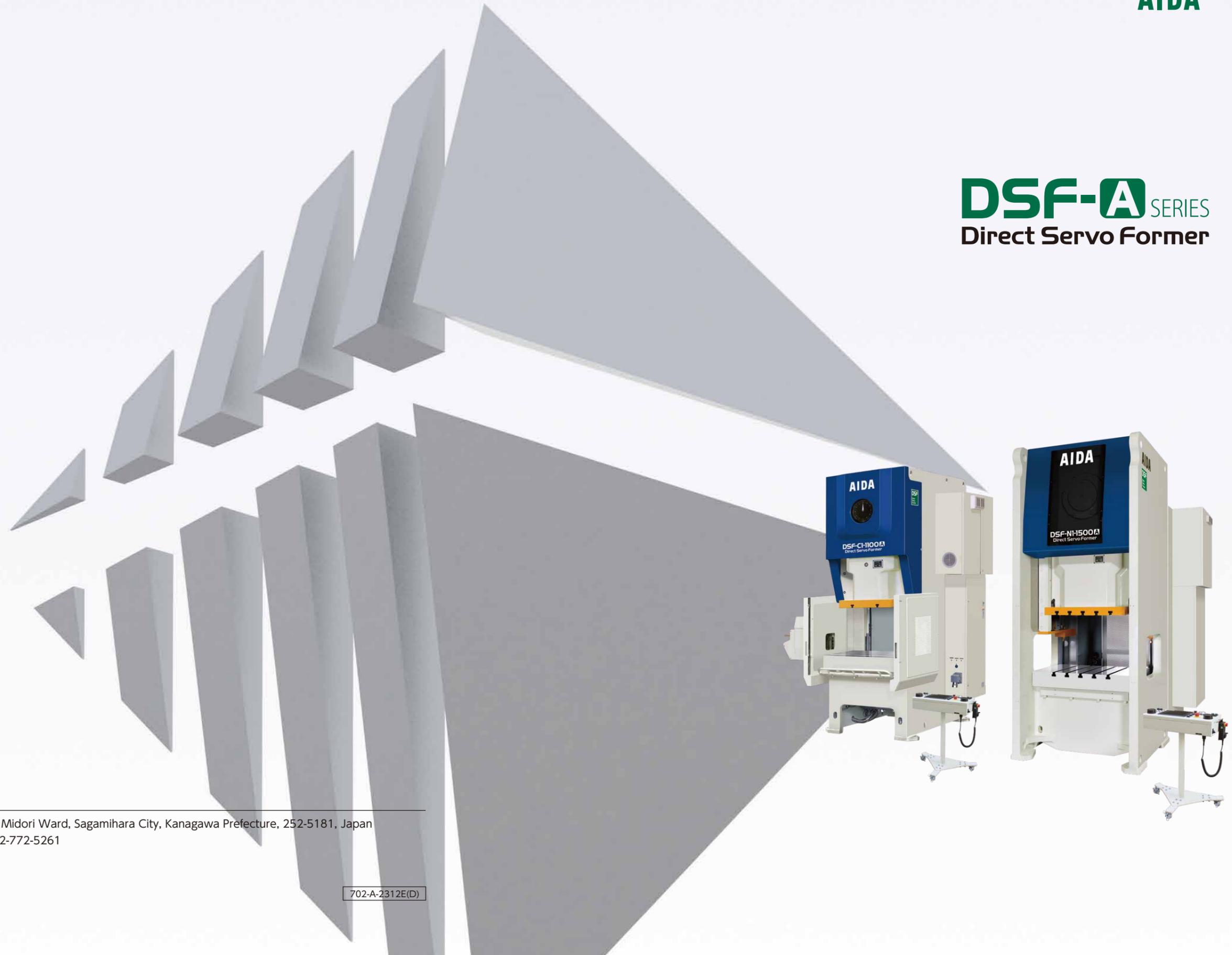




DSF-A SERIES

Direct Servo Former



AIDA ENGINEERING, LTD.

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702-A-2312E(D)

DSF Direct Servo Former

01



AIDA continues to independently develop and internally manufacture servo motors and drives, which it has done since it introduced the world's first direct-drive servo presses to the marketplace.

AIDA continues to pursue the highest stamping press productivity. By utilizing AIDA low speed, high-torque servo motors--specifically designed for press applications--in a 'direct drive' configuration, freely programmable slide motions are now possible. This simple configuration with minimal drive linkages makes it a very reliable and easy to maintain system.

AIDA servo motors are the culmination of many years of manufacturing experience, and you can have confidence in their long-term contribution to your business.

The Continuing Evolution of Servo Motors to Achieve Optimal Forming Motions

To achieve the agile variable speed motion and the torque capacity required by servo presses, our newly developed servo motors have been redesigned from square one. This redesign has boosted maximum output by 150%.

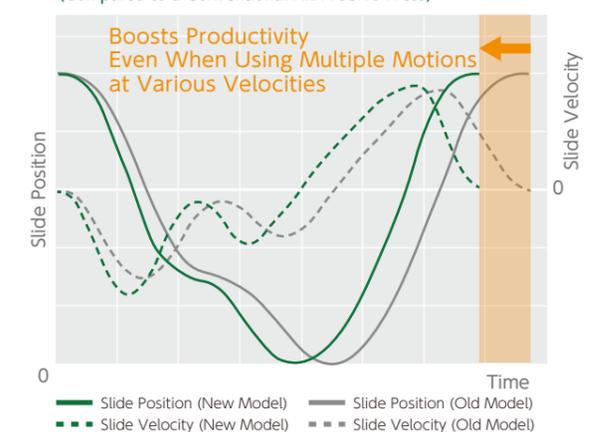
AIDA servo motors enable low slide velocities in the forming zone and high slide velocities outside of the forming zone to achieve 'variable speed motions' that deliver better part formability together with better productivity. A wide array of processing methods such as 'pendulum motion' for optimal high-speed production are now possible.

The 'silent deceleration' function allows for a 'soft touch' at the start of forming, significantly reducing forming noise and vibration and extending die life. When the high-speed operation mode is selected, higher productivity through either full-stroke or pendulum motion is used while still maintaining the same velocities in the forming zone.

Boosting Productivity with Pendulum Motion (Compared to a Conventional AIDA Servo Press)



Boosting Productivity with Silent Deceleration Motion (Compared to a Conventional AIDA Servo Press)



Evolutionary Operability

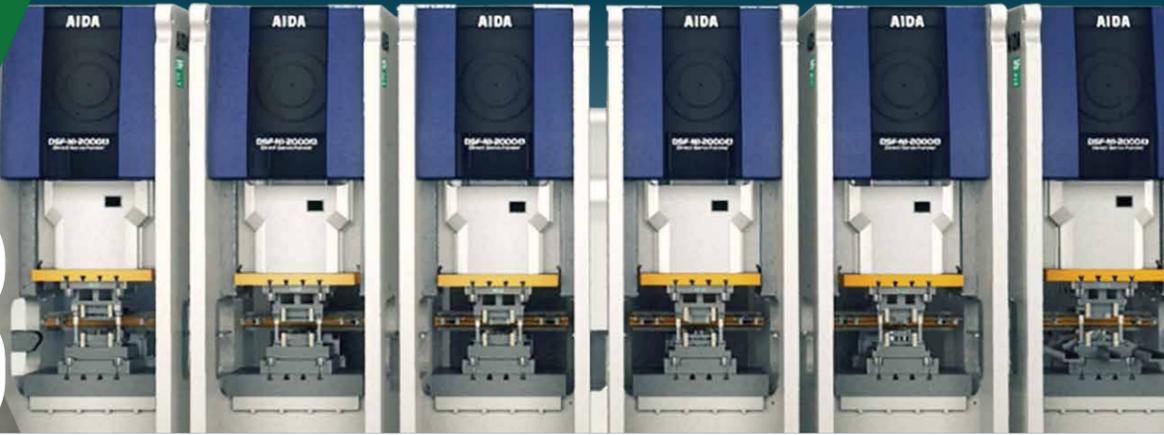
Evolutionary Energy Conservation

<Standard Equipment> Protective covers, LED 8.4-inch color HMI, Step Feed controller, casters.

02

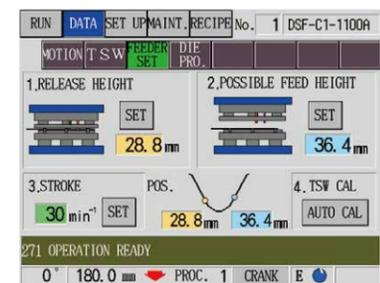


03



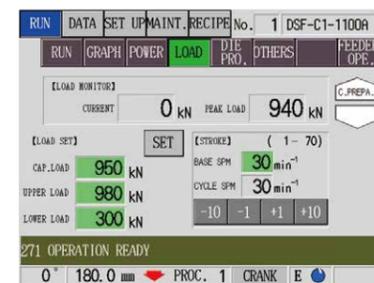
Optimal Settings Via Simple Operations

When paired with an AIDA feeder, the pendulum stroke length can be automatically calculated by merely inputting simple feeder settings. This auto-calculation function easily enables high productivity by keeping the pendulum motion stroke as short as possible.



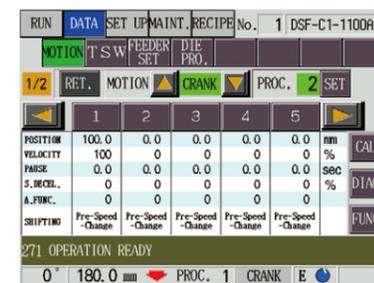
Non-Defective Product Control Via Load Settings

Setting the load conditions (upper and lower load limits and rated load) for non-defective products for each product enables the determination of product quality based on the forming load. Load parameters for non-defective products can be saved to the recipe, enabling easy quality control for each product.



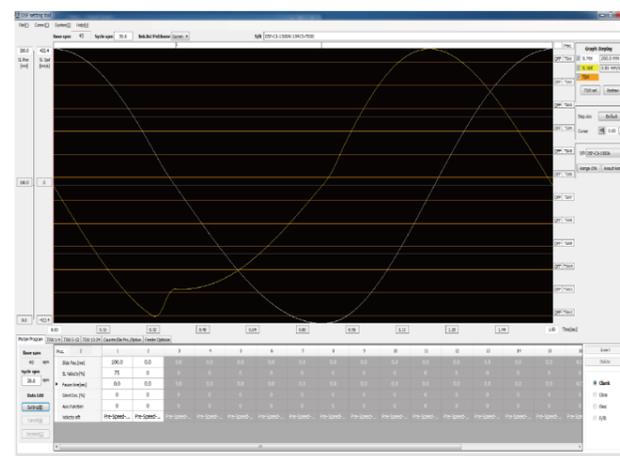
Freely Programmable Slide Motion

Our servo presses are pre-programmed with basic slide motions--crank, link, and pendulum--and include silent deceleration settings and five variable-speed patterns. These can be used in combination to easily achieve the same motion profile as an existing press or the optimal forming motion profile.



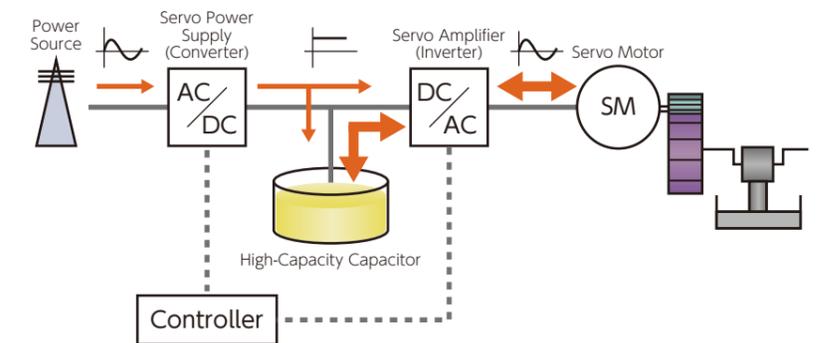
The Motion Setting Tool (Standard Specialized Software)

To assist in the creation of motion settings on the press HMI, AIDA provides a convenient software tool that allows the user to input motion settings and graph the calculated results at a computer in an office just as if they were at the press HMI. The motion data created using this software tool can also be managed at a desktop computer using the recipe function, and the data can be uploaded to the press. This data can be uploaded using a standard connection cable or an optional Wi-Fi solution.



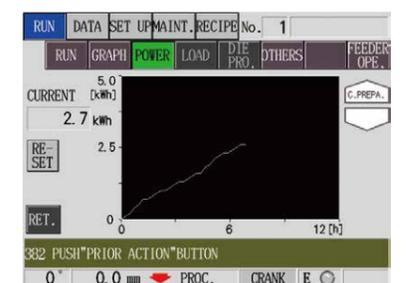
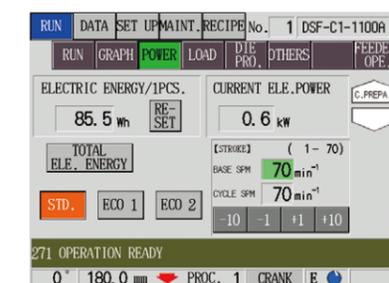
Energy Savings Via Energy Management

We have further evolved the peak power reduction feature in our conventional high-capacity capacitor system by adding a control function to the servo power source. By actively controlling the stored energy based on the slide motion, we have been able to reduce peak power demand while also reducing energy consumption.



Energy Usage Visualization

Power consumption and consumption trends can be viewed as a graph. If the 'Eco' operation mode is selected, the servo motor torque is actively minimized outside of the forming portion of the stroke in order to further reduce energy consumption.



Configuration & System Overview

Servo Presses in Action

Extending Press Life ※DSF-N1-A Series

We have redesigned the press frame and its welded construction to boost bolster rigidity by 50%. In addition, the symmetrical design of the frame reduces stress concentration on frame members and enables uniform front and rear frame elongation.

This new frame design greatly improves dynamic accuracy during forming and contributes to longer die life.

Electrical components are located in an isolated cabinet to protect them from forming vibration. This reduces press downtime due to electronic component failure and contributes to longer component life.

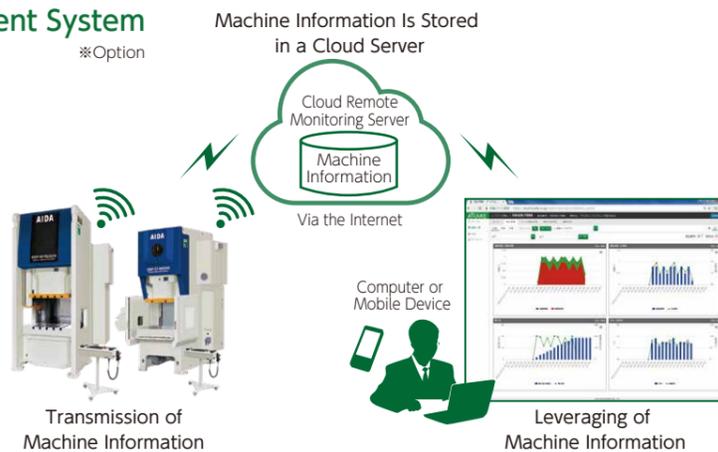


Machine Information Management System



"Ai CARE" is a system that automatically collects information from the press and peripheral devices, etc., and stores this data in a cloud server. The accumulated information can then be downloaded to a computer, etc., enabling even the remote management of press utilization, production, and preventive maintenance.

※ A separate agreement is required for operation.



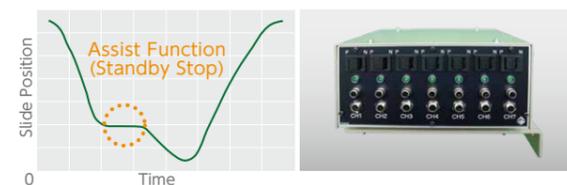
High-Performance Die Protection ※Option

A high-speed CPU in the servo controller is used to dramatically shorten response times compared to a standard multifunction die monitor, greatly improving productivity when running in pendulum motion mode. Moreover, using AIDA's 'Assist Function,' even if the reciprocal timing of an automation device is complicated, it makes it possible to stop the press in standby mode just prior to reaching an interference zone.

Even if there are devices that do not track along with the press when it is running at high speed, automatic continuous motion can be maintained without forcing the press to perform a protective stop.

We offer two types to match your specific application.

- 3-Channel Type: Assist Pack A
- 7-Channel Type: Assist Pack B (For Ejection Confirmation Sensors)



Large SPM Indicator ※Option

Large indicator displays SPM, Crank Angle or Slide Position.

It is not only easy to view but also contributes to improving operability by automatically switching necessary values according to operation modes.



Production Line Examples

Coil Line



DSF-C1-1100A + LFA-L

Tandem Line



DSF-N1-2000A + NCAHⅢ(S) Transfer Robots

Forming Example (DSF-C1-2000A)

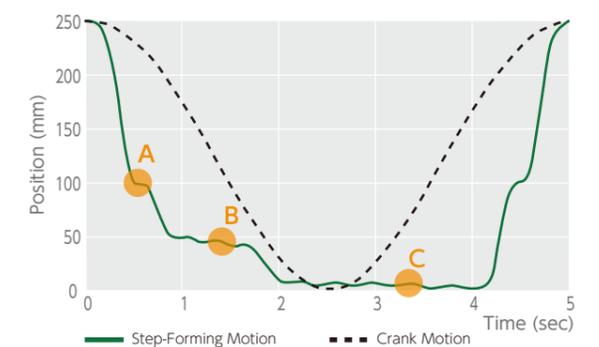
Leveraging the freely programmable slide motion of a servo press, it is possible to deep-draw high-strength steels into irregular shapes without the cracking issues that would occur if using a mechanical press.

【Material】 780 MPa-Class High Strength Steel
【Forming Energy】 28,000 J



Slide Motion Graph

- A 'Soft-touch' using 'Silent Motion Deceleration'
- B Pre-forming
- C Assuring material thicknesses by 'Step-Forming'



Energy Graph

AIDA servo presses enable forming at low speeds with high working energies that is not possible using a mechanical press.

Depending on production conditions--such as the forming load and the slide velocity--it is possible to generate high working energy values that exceed the catalog values.

