Today, Komatsu has created its Automation Technology, bringing new linear motor-controlled transfer feeders, high-speed tandem-line loader/ Unloader (H*TL) and fully programmable fully-integrated AC servo technology. This technology meets the high demands of a competitive, highly-technical and complex stamping industry. As a result of the high performance of engineering excellence to create equipment that satisfies performance, have been the hallmark of Komatsu Press Division since 1998. In response to needs in the U.S. manufacturing market, Komatsu develops fully-hybrid AC servo presses, the company further expands its servo markets, making Komatsu the first to offer a first standard hybrid AC servo and experience in servo drive systems. These materials, Komatsu launches a comprehensive development process to bring modern presses, featuring quick transfer presses that deliver high-productivity features, such as fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology. These materials, Komatsu launches a comprehensive development process to bring modern presses, featuring quick transfer presses that deliver high-productivity features, such as fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology. These materials, Komatsu launches a comprehensive development process to bring modern presses, featuring quick transfer presses that deliver high-productivity features, such as fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology. These materials, Komatsu launches a comprehensive development process to bring modern presses, featuring quick transfer presses that deliver high-productivity features, such as fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology, and fully-integrated AC servo technology.

Specifications subject to change without notice.
Komatsu: A Heritage of Innovation

Technological innovations that increase capacity, productivity and performance have been the hallmarks of Komatsu Press Division since its inception more than 75 years ago. Over the years, Komatsu has demonstrated a commitment to respond to customer demands and originate technologies and systems to meet the needs of a global marketplace. Today, Komatsu continues to build on its tradition of engineering excellence to create equipment that satisfies the complex demands of a competitive, highly technical and complex metal stamping industry.

In response to needs in the U.S. auto manufacturing market, Komatsu develops fully-automatic transfer presses that deliver high-productivity features, such as fully-automated die change and the first servo-controlled transfer feeder.

High-strength, low-alloy carbon steel and other high-strength metals replace traditional metals in production of common stamped parts. Realizing the limitations of traditional flywheel-driven powered presses in forming these materials, Komatsu launches a comprehensive development process to bring modern CNC servo technology into the stamping arena. Komatsu engineers build on years of experience in servo drive systems.

1924

Komatsu leverages its technologically-innovative capabilities for heavy equipment in the mining industry to create the Komatsu Press Division and introduces its first low-maintenance stamping press, featuring the durable clutch-brake unit.

Komatsu perfects its proprietary plunger guide system, which produces 30 percent longer die life and improved part quality. The plunger guide eliminates virtually all lateral movement, allowing tighter gib tolerances and precision slide movement. This technology quickly becomes an industry standard.

Komatsu Press Division wins the Deming Prize for engineering excellence, the first Japanese press manufacturer to receive this coveted engineering award. This acknowledgment strengthens Komatsu Press Division’s position as worldwide industry leader.

Komatsu’s Super-series of single point gap frame presses brings product standardization to the industry with standard models, features and specifications for added value and performance.

General View ("O" Frame)
1998

Komatsu introduces the world’s first standard hybrid AC servo press. Brilliantly combining the toggle link drive of forging press models with that of modern and efficient AC servo drive systems, the new “Free Motion” of the slide motion path brings together the productivity of a mechanical press with the motion control of a hydraulic press.

Komatsu demonstrates continued engineering excellence with a series of single-point servo presses in standard models ranging from 35 to 200 metric tons as well as standard models in two-point and four-point straightside frames up to 2,500 tons—offering size and capacity that no one else can deliver. As a result of the worldwide acceptance of Komatsu AC servo presses, the company further expands its servo technology division.

Komatsu produces the world’s first modular, servo-controlled, multi-slide transfer press rated at 4,200 metric tons. The press features independent slide motion control for each of the seven slides.

Komatsu creates its Automation Technology Division to develop new peripheral automation devices that enhance the technology and productivity advances of its AC servo presses. The division quickly brings new linear motor-controlled transfer feeders, high-speed tandem-line loader/unloader (H*TL) and fully programmable AC servo die cushion automation to market, making Komatsu the first to offer a fully-integrated AC servo technology system in support of customer needs.

Today

Komatsu has delivered over 4,000 AC servo presses into the global market, proof of the worldwide acceptance for the company’s innovative technologies and products.

### Komatsu H1F-2 Hybrid AC Servo Presses

<table>
<thead>
<tr>
<th>Model Specifications</th>
<th>H1F110-2</th>
<th>H1F150-2</th>
<th>H1F200-2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Max. Capacity</strong></td>
<td>121 US ton</td>
<td>165 US ton</td>
<td>220 US ton</td>
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<tr>
<td><strong>Frame Type</strong></td>
<td>Gap Frame</td>
<td>Gap Frame</td>
<td>Gap Frame</td>
</tr>
<tr>
<td><strong>Stroke</strong></td>
<td>7.87 in.</td>
<td>9.84 in.</td>
<td>11.8 in.</td>
</tr>
<tr>
<td><strong>Counter Bal. Cap</strong></td>
<td>0.20 in.</td>
<td>0.24 in.</td>
<td>0.24 in.</td>
</tr>
<tr>
<td><strong>Main Motor</strong></td>
<td>40 h.p.</td>
<td>70 h.p.</td>
<td>80 h.p.</td>
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<tr>
<td><strong>BM</strong></td>
<td>2.03</td>
<td>0.12</td>
<td>3.0</td>
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<td><strong>AC</strong></td>
<td>46.5</td>
<td>51.5</td>
<td>61.4</td>
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<td><strong>HD</strong></td>
<td>43.3</td>
<td>49.2</td>
<td>57.0</td>
</tr>
<tr>
<td><strong>AD</strong></td>
<td>18.9</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>AG</strong></td>
<td>26.8</td>
<td>29.9</td>
<td>33.1</td>
</tr>
<tr>
<td><strong>AH</strong></td>
<td>29.5</td>
<td>33.5</td>
<td>33.5</td>
</tr>
<tr>
<td><strong>AC</strong></td>
<td>10.9</td>
<td>12.2</td>
<td>15.3</td>
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<tr>
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<td>15.3</td>
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Specifications (inches) (“C” Frame) (“O” Frame)

- **General View (“C” Frame)**
- **Model Specifications**
  - **H1F110-2**
  - **H1F150-2**
  - **H1F200-2**
- **Pendulum Speed**
- **Max. Capacity**
- **Frame Type**
- **Stroke**
- **Counter Bal. Cap**
- **Main Motor**
- **BM**
- **AC**
- **HD**
- **AD**
- **AH**
- **AC**
- **HD**
- **AD**
- **AH**
- **AC**
- **HD**
- **AD**
- **AH**
- **AC**
- **HD**
- **AD**
- **AH**
- **AC**
- **HD**
- **AD**
- **AH**
- **AC**

Komatsu has delivered over 4,000 AC servo presses into the global market, proof of the worldwide acceptance for the company’s innovative technologies and products.
The H1F-2 Servo-driven Press:

**Designed for Superior Flexibility and Accuracy**

- Ideal for progressive, transfer or manual die operations
- Incorporates modern, state of the art A.C. servo technology into mechanical stamping press designs
- Ability to control slide velocity throughout the stamping work being done—optimal slide motion can be set for any application
- Maintains constant working energy throughout stroke regardless of slide velocity
- Provides ability to dwell at position to allow timing of secondary work within the press cycle time
- Improved part quality
- Increased die life
- Ability to program multiple motion paths before returning to top dead center
- Automatically maintain and adjust slide position to assure consistent die height or control tonnage
- Elimination of high maintenance mechanical components like the clutch-brake unit
- Reduces die tryout time and expense
- Saves energy cost by reducing electricity consumption

**A Higher Level of Standard Equipment for Increased Performance**

- U.S. standard bolster and slide machining
- Heavy plate, rigid frame construction
- Available in optional solid side-frame design on 110-ton models and above
- Pre-machined, heavy-duty cast slide with adapter plate
- Precision oil-lubricated long 6-point gib
- Automatic lubrication of main drive components
- Quick-responding, dependable hydraulic overload protector
- Shock-resistant, pendant-mounted control
- T-stand for easy set-up and operation
- Job storage memory
- Safety block with interlock
- Air counter-balance system

**The Komatsu Warranty**

When a press is designed as a system, it should be expected to perform as a system without routine tear downs for wear items (the conventional "weak link" in our competitors' presses.) That's why every Komatsu H1F press comes with a Two Year Unconditional Warranty on anything that rolls, slides or glows—parts and labor. Unlike other manufacturers, there is no hourly limit—your press is guaranteed to perform 3 shifts a day, 7 days a week, 365 days a year. With Komatsu systems engineering it's possible to extract the full potential from your press, and the full revenue potential from every job.

**KOMATSU**

**HIGH PERFORMANCE SHOULD NOT BE OPTIONAL**
Heavy plate, rigid frame construction

Ability to control slide velocity throughout the stamping work

Available in optional solid side-frame design on 110-to 200-ton presses

Elimination of high maintenance mechanical components

U.S. standard bolster and slide machining

Incorporates modern, state-of-the-art A.C. servo technology

Increased die life

Improved part quality

Accuracy

Redundant, programmable

For press operation

SMIM

Pulse Coder

Drive

Signal

Redundant

Monitoring

&

Dedicated, isolated from direct load and shock inherent in hydraulic presses can be released easily, to allow operations resumed against damage to the press or die sets. If the rated load is exceeded at top dead center (TDC), the press stops automatically. The precision oil-lubricated long 6-point gibbs allow to "float" at the top while the motor and control system—no proprietary motors or motor controller.

Gauges of the load monitor read tonnage applied every stroke. As both motor can select to either control the die height or control to tonnage. Die consistent height (slide face to bolster top).

For press operation

All information necessary for press set-up, start-up, operation and

Note

Coin Center) the press stops automatically. The precision oil-lubricated long 6-point gibbs allowed to "float" at the top while the motor and control system—no proprietary motors or motor controller.

Gauges of the load monitor read tonnage applied every stroke. As both motor can select to either control the die height or control to tonnage. Die consistent height (slide face to bolster top).
Standard Features

1 Drive Layout

**Komatsu engineering** has combined today’s modern A.C. servo technology to provide a versatile, efficient and reliable solution to the changing demands of today’s pressroom. Incorporating a series of mechanical ratios allows for a standard motor size from a proven motor and control system—no proprietary motors or motor controller are used.

2 Accuracy within microns

A **Linear Scale** is mounted to the frame of the press and monitors the slide position to assure repeatable die height consistency at the bottom of the stroke where the work is being done. The linear scale is mounted to a sub-frame, fixed at the bottom to assure slide position accuracy and allowed to “float” at the top while the press frame is under load.

3 Auto Die Height Adjustment

**Auto Tonnage Control when selected for use by user**

The linear scale continuously monitors the slide position to assure consistent die height (slide face to bolster top). The two (2) strain gauges of the load monitor read tonnage applied every stroke. As both the linear scale and strain gauges send data to the control, and the operator can select to either control the die height or control tonnage. Die height adjustments and tonnage settings are automatically made during continuous operation of the press. System reliability is assured by constant position monitoring of the main shaft angle detector, motor encoder and actual slide position by the linear scale.

4 Centralized Recirculating Lubrication System

**Starting in the gear box**, the constant pressurized flow of oil reaching the bearings and journal, as well as the gibs flows into a recovery tank with dual filtering.

5 Drive system and control

**Komatsu AC servo technology** dual timing belts are used to couple the motor to the drive train, which are also constantly monitored electronically for motion and breakage, which allows isolating the servomotor from direct load and shock inherent to stamping operations.

6 Hydraulic Overload Protector

**Helps prevent damage to the press and dies.** All Komatsu presses are equipped with a hydraulic overload protector, a standard feature that has been standard for decades helping to protect against damage to the press or die sets. If the rated load is exceeded at BDC (Bottom Dead Center), the press stops automatically. The hydraulic pressure can be released easily, to allow operations resumed smoothly even if part jamming occurs.
A Higher Level of Standard Equipment

Designed for Superior Flexibility and Accuracy

The H1F-2 Servo-driven Press:
...

- Ability to control slide velocity throughout the stamping work
- Automatically maintain and adjust slide position
- Elimination of high maintenance mechanical
- Incorporates modern, state of the art A.C. servotechnology
- Quick responding, dependable hydraulic overload protector
- Ability to program multiple motion paths before returning to top dead center
- Three-way slide position repeatability of slide held within microns
- Redundant, combination of mechanical
- Programmability and state-of-the-art
- The best motion path
- Stamp operation...
As a result of the worldwide acceptance of Komatsu AC servo forging press models with that of modern presses, the company further expands its servo new “Free Motion” of the slide motion brings together the productivity of a excellence with a series Komatsu introduces the world’s toggle link drive of Komatsu has delivered over 4,000 AC servo presses into the global market, worldwide acceptance for the company’s innovative technologies and products. Division to develop new peripheral each of the seven slides. Fully integrable AC servo die cushion automation to technology and productivity advances of market, making Komatsu the first to offer a it its AC servo presses. The division quickly Komatsu produces the world’s first modular, fully controlled, multi-slide transfer press. Specifications subject to change without notice.

### Model Specifications

<table>
<thead>
<tr>
<th></th>
<th>H1F110-2</th>
<th>H1F150-2</th>
<th>H1F200-2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frame Type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max. Capacity</strong></td>
<td>US ton</td>
<td>121</td>
<td>165</td>
</tr>
<tr>
<td><strong>Rating Point</strong></td>
<td>in.</td>
<td>0.20&quot;</td>
<td>0.24&quot;</td>
</tr>
<tr>
<td><strong>Stroke</strong></td>
<td>in.</td>
<td>7.87&quot;</td>
<td>9.84&quot;</td>
</tr>
<tr>
<td><strong>Speed</strong></td>
<td>s.p.m.</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td><strong>Pendulum Stroke</strong></td>
<td>in.</td>
<td>1.18”-5.91”</td>
<td>1.18”-7.87”</td>
</tr>
<tr>
<td><strong>Pendulum Speed</strong></td>
<td>s.p.m.</td>
<td>-138</td>
<td>-128</td>
</tr>
<tr>
<td><strong>Die height</strong></td>
<td>STD in.</td>
<td>13.78&quot;</td>
<td>16.54&quot;</td>
</tr>
<tr>
<td></td>
<td>Long in.</td>
<td>14.96&quot;</td>
<td>17.72&quot;</td>
</tr>
<tr>
<td><strong>Slide Adjustment</strong></td>
<td>in.</td>
<td>3.94&quot;</td>
<td>3.94&quot;</td>
</tr>
<tr>
<td><strong>Slide</strong></td>
<td>Width in.</td>
<td>24.41&quot;</td>
<td>27.56&quot;</td>
</tr>
<tr>
<td></td>
<td>Depth in.</td>
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<td>21.65&quot;</td>
</tr>
<tr>
<td><strong>Bolster</strong></td>
<td>Width in.</td>
<td>43.31&quot;</td>
<td>49.21&quot;</td>
</tr>
<tr>
<td></td>
<td>Depth in.</td>
<td>26.77&quot;</td>
<td>29.92&quot;</td>
</tr>
<tr>
<td><strong>Counter Bal. Cap</strong></td>
<td>lbs.</td>
<td>772</td>
<td>1102</td>
</tr>
<tr>
<td><strong>Main Motor</strong></td>
<td>h.p.</td>
<td>40</td>
<td>70</td>
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</table>

Specifications subject to change without notice.