

FCS Group

Fu Chun Shin Machinery Manufacture Co., Ltd.

No. 269, Baoding Road, Pitou Village, Guanmiao District, Tainan City 71841, Taiwan
TEL : +886-6-5950088 • FAX : +886-6-5951129 • E-mail: fcsco@fcs.com.tw



FCS
www.fcs.com.tw

Sold and Serviced in America by MARUKA U.S.A. INC.

Missouri (Headquarter)

1210 NE Douglas Lee's Summit, MO 64086
TEL : (800)262-7852, (816)524-1811
FAX : (816)524-5444

New Jersey

PO Box 747, Pine Brook NJ 07066
TEL : (973)487-3800
FAX : (973)244-2147

Los Angeles

16440 Manning Way, Compton, CA 90703
TEL : (562)926-3654 FAX : (562)926-0884

Chicago

2777 Finley Rd, Suite 15, Downers Grove, IL 60515
TEL : (630)953-1707 FAX : (630)953-1753

Charlotte

4526-B Westinghouse Blvd, Charlotte, NC 28273
Tel: (704) 568-9910 Fax: (704) 568-9950

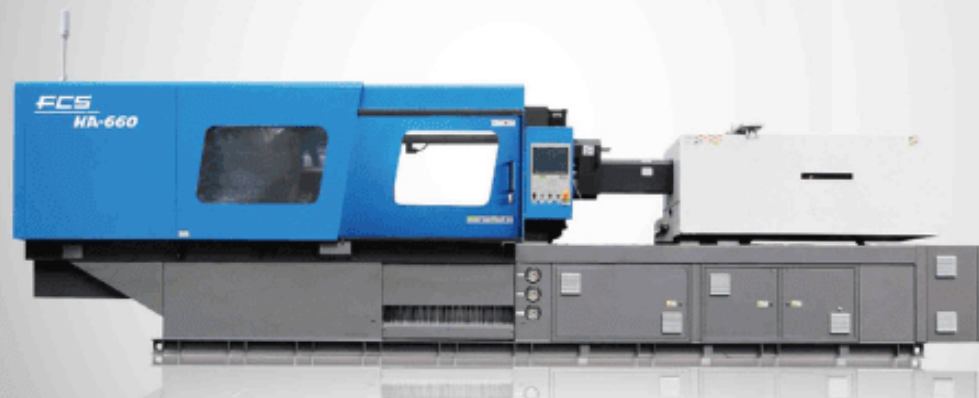
NOTES

- The figures are subject to change without any legal obligation on the part of the manufacturer.
- The specifications are expressed in SI units (1MPa=10.2kgf/cm² 1kN=0.102tonf)
- The applicable max. injection pressure and holding pressure will be restricted according to the material in the real molding operation.
- The applicable max. injection pressure and holding pressure will be restricted by molding conditions and cycle time.
- The figures for the max. injection rate and the max. injection speed are theoretical values.
- The actual injection rate and injection speed will be restricted by pressure.
- A large-sized screw may not be applicable to some kinds of material.
- Breaker capacity may be changed when optional devices are attached.



For safe use of HA Series, please read the respective manual carefully, especially sections for operation and maintenance, and follow all the safety precaution instructions specified in the manual.

Photographs in the catalog include optional devices. If these products and technologies (including programs) are subject to Taiwan export control laws, including Taiwan Foreign Exchange and Foreign Trade Law, the products and technologies are required to obtain an export license of the Taiwan government, when exported from Taiwan.



Version 2023

HA SERIES

Hi-Tech Intelligent
Injection Molding Machine



IT'S VERY WELL
MADE IN TAIWAN

FCS
www.fcs.com.tw



ISO9001:2008
Certification



CE Certification



ANSI Certification



IT'S VERY WELL MADE IN TAIWAN

Fu Chun Shin Group (FCS) has been an international plastic injection molding machinery manufacturer since 1974. We have been developing advanced manufacturing technologies for the plastic industry for more than 40 years. Following our tradition, FCS has recently developed a servo-driven hydraulic injection molding machine to meet the industry request for power saving.

By adopting the advanced servo system, the HA series has achieved excellent energy-saving, precision movement, fast response time, low noise levels, low oil temperature, and a user friendly HMI (Human – Machine Interface) control.

The FCS HA series adopts high efficient motor and driver system. It can reduce the power consumption by 70% over the ordinary fixed pump injection molding machine. At the same time, the closed-loop design improves the precision and repeatability. With the need for green technology and global competition, the FCS HA series hi-tech intelligent injection molding machine will be your first choice when selecting hydraulic power injection molding machines.

High Energy Saving

Under ideal working conditions, power consumption is reduced by 40%, when compared to that of variable displacement and 70% less than that of fixed displacement pumps in an effort to become more efficient.

High Precision

FCS machine movement is precisely controlled even at low pressure and flow rates with variations of $\pm 0.5\%$. The semi-closed loop hydraulic system can produce part weight error in the range of $-0.4 - 0.7\%$.

Fast Response

The dynamically controlled servo system is equipped with a pressure feedback monitoring device for high precision and sensitivity. The closed-loop design allows precise control, shorter cycle times and improved production efficiency.

Low Noise

As opposed to a standard fixed pump hydraulic system, the HA series servo pump is only "on" when there is fluid demand, which greatly reduces the noise level in the work area to less than 70dB.

Low Oil Temperature

Due to the servo pump efficiency, the hydraulic oil temperature is maintained at a lower temperature which intensively saves water.

PQ Control

Pressure (P) and flow (Q) can be controlled by a simple voltage signal into FCS' Computer Control System.

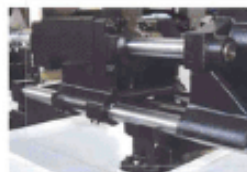


New Mold Adjusting Mechanism

The new mold adjusting platen mechanism design doesn't require its mounted nut for torque tuning and distributes force evenly on the tie bars.

All-new Control System

KEBA i2880, with its 12" high resolution Touch Screen and ultra-fast scan time for high repeatability and quick responses, is a high-end controller.



New Patented Injection Sliding Structure

The new pillar guiding plate structure is shortened to avoid barrel inclination and deformation. And with Molybdenum Disulfide coated bushings, it produces a less resistant, faster moving, very clean, oil free injection sliding structure.



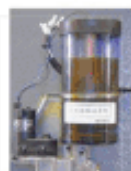
Oil-less Bearing

Oil-less bearing on the moving parts of platen and toggle, greatly reduces maintenance cost, and provides for a cleaner production environment.



Semi-closed Loop System (optional)

Adopts a semi-closed loop hydraulic system to effectively promote molding stability.



Automatic Lubrication System

An automatic lubrication system circulates and distributes oil equally for greater efficiency in lubrication and enhanced toggle life.



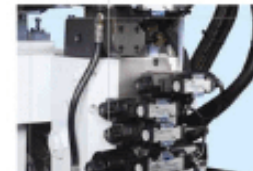
Highly Rigid Structure Frame

Designed based on Finite Element Analysis (FEA) for Stress and Strain effects to ensure the HA's excellent frame structure.



Patented Regeneration Loop

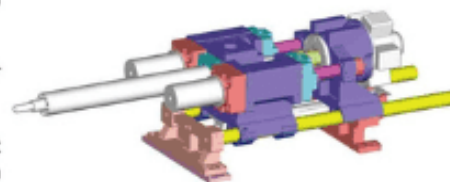
A patented feature that allows high speed or high pressure production for lower energy consumption.



Digital Back Pressure Installation

The back pressure can be directly changed and set on the controller for easy operation.

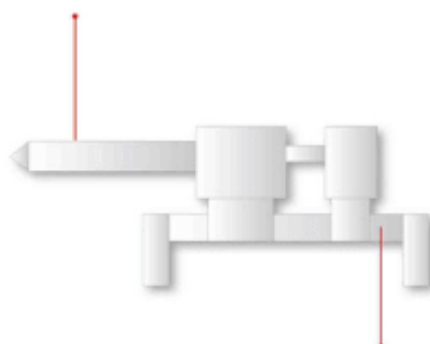
- Screws are made only with high-grade steel plus a final plasma (hardening) step.
- Barrel are made with special alloy, which is suitable for normal corrosive material (glass fiber<15%)
- Dual (balanced) injection cylinders. No lateral forces act on the unit during injection, enabling precise injection control.



The injection assembly is guided with patented molybdenum disulfide coated bearings.

Conventional Guide Plate Design

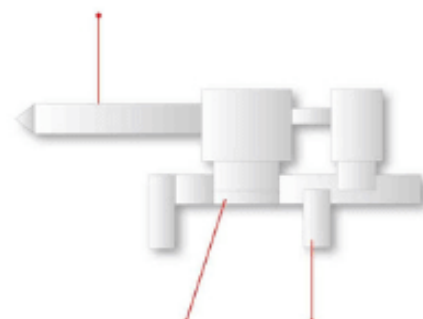
Barrel deflection will accelerate wear of screw.



Guide plate deflected, bent or deformed due to larger stand span.

FCS Newly Developed Guide Plate

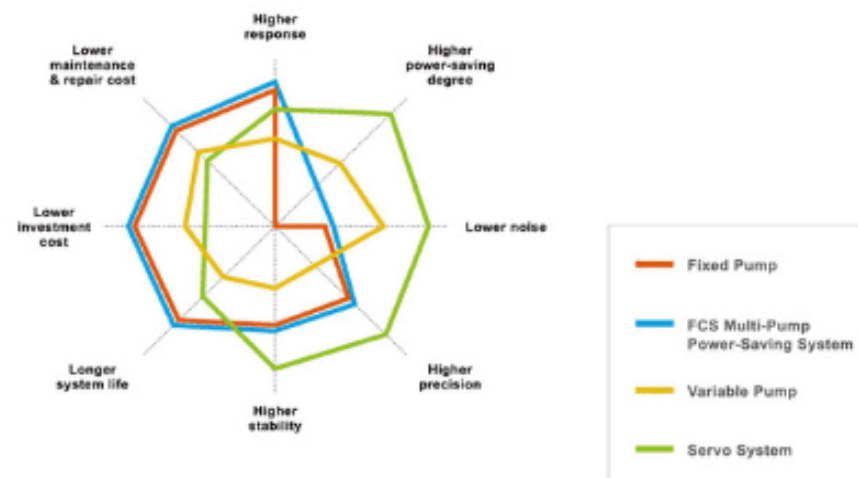
Clearance between the guide rod and plate has been re-designed to prevent deflection of the barrel.



Molybdenum Disulfide film treated for permanent lubrication free operation.

Reduced span to prevent the guide plate from being bent or deformed.

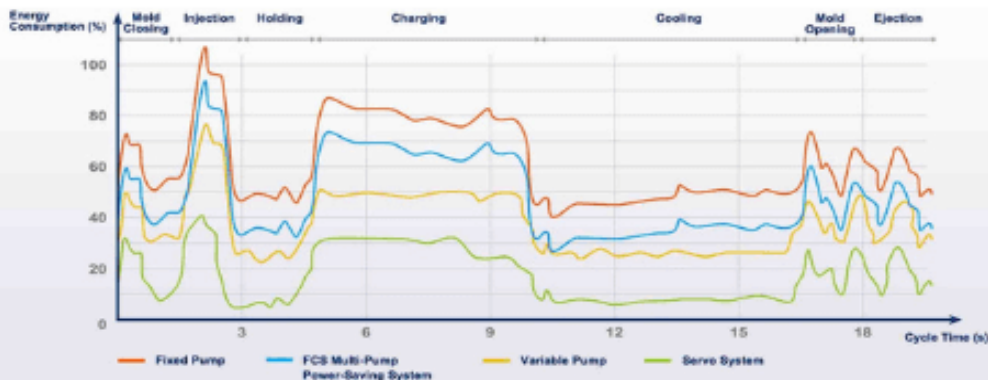
Power-Saving Systems Comparison for Injection Machines



Items	Fixed Pump	FCS Multi-Pump Power-Saving System	Variable Pump	Servo System
Stability	General	General	Worse	Better
Precision	Medium	Medium	Lower	Higher
Noise	Normal	Normal	Silent	Silentest
Power-Saving Degree	-	15-25%	30-45%	40-70%
Response	Regular	Quicker	Slower	Fastest
Maintenance & Repair Cost	Lower	Lower	General	Lower
Investment Cost	Lower	Lower	General	General
Payback	Shorter	Shorter	General	General
System Life	Longer	Longer	Shorter. Hydraulic system must keep clean, maintenance cost is higher.	General
Application Scope	Can be used on most models.	Can be used on most models.	Difficult to apply on models with clamping force higher than 500T.	Can be used on most models.
Suggestion	The 1st power-saving system, suitable for all kinds of production.	The 2nd system, which is more economic than fixed pump, suitable for all kinds of production.	Suitable for precise injection, but less steady production.	This new generation system with higher C/P value covers steady and power-saving production.

Remark: To achieve best performance of these systems, production should be under the following conditions: Long hold pressure time, long cooling time, and production speed slower than two cycles under one minute, thick wall products. These power-saving systems will have outstanding efficiency.

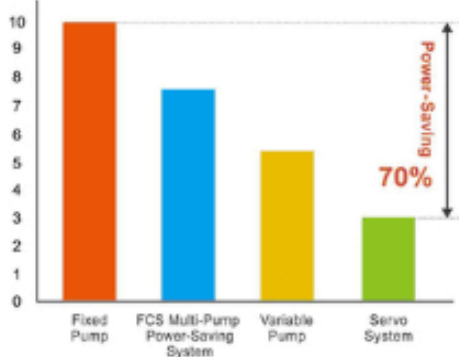
Test of Energy Efficiency



Power Consumption Comparison

Depending on products and molding conditions the FCS injection molding machine can save up to 70% of the power required of fixed pump, and 40% more than variable pump injection molding machines.

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Power-Saving Comparison Data

Items	Unit	Fixed Pump	Multi-Pump Power-Saving System	Variable Pump	Servo System
Cycle Time	Second	16	17	16	16
Product Weight	Gram	3,600	3,624	3,544	3,595
Total Weight	Gram	360,0	362,4	354,4	359,5
Power Consumption	kWh	3,574	2,713	1,891	1,094
Power Consumption Per Hour	kWh	8,042	5,747	4,257	2,460
Power Consumption Per Year	kWh	70,447	50,343	37,291	21,549
Power-Saving Rate	kWh/Kg	9.92	7.49	5.34	3.04
Power-Saving Compared to Fixed Pump	%	-	24	46	69

Calculation Based on - 24 Hours/Day 365 days.

Customers' satisfaction is always our main goal at Fu Chun Shin. We value customer's satisfaction feedback as a guide to improve our service policies. Our service is available throughout the world directly or through one of our distribution partners.

FCS also offers "Turnkey Solution" for its customers. It provides not only convenience of "one-stop merchandising", but also increases competitiveness for the customers.

The "Turnkey Solution" includes investment analysis, facilities requirements, cell layout, and production capability studies.

