

# VEICHI

## SF81 Injection Molding Machine Servo Controller





Shenzhen Veichi Electric Co., Ltd is a high-tech enterprise that is professionally engaged in the development, manufacturing and marketing of industrial automation control products, and committed to becoming a global leading provider of industrial automation control products and system solutions.

The company owns powerful R&D team, relatively perfect production system, independent intellectual property and manufacturing bases in Shenzhen and Suzhou. To improve our R&D strength, we keep on introducing advanced overseas technology and broadening our partnerships with first-class universities and research institutions.

The main products of Veichi Electric include a variety of Variable Frequency Drive(VFD), Servo Drive System, Photovoltaic Inverter, PLC, HMI, Automation Equipment, etc, which are widely used in industries such as oil & gas, chemical industry, ceramic, crane&hoist, metallurgy, electrical cable and wire, plastic, print and package, textile, metal work and cable, coal mining and municipal engineering. Suitable solutions and products are always ready to meet the demands and improve comprehensive competitiveness of users.

With the spirit of "Innovation is the lifeblood of Veichi", we're committed to becoming one of the leading providers of electric drives, industrial control and green energy products. Veichi has set up more than 40 brand offices in China and dozens of partners in Asia, Europe and Africa. Veichi has been named Chinese Electric Industry's Top Ten National Brands, Chinese Electric Industry Top Ten Satisfying Brands and Top Ten National Brands of Inverter Industry. Veichi products have become the first choice of many enterprises.

## Energy Saving Principle of SF81 Die Casting Machine Servo Drive

When the hydraulic system of die casting machine is working, each action is driven by a proportional valve, however, the load of each action are not the same. Except the high pressure clamping and injection, other actions are of light load, so there is a huge waste of energy. In order to eliminate the flooding phenomenon and save energy, we can make the pump oil supply amount and die casting machine flow requirements consistent with each other by adjusting the motor running speed of each action. Therefore, it has an obvious energy-saving effect for fixed displacement pump die casting machines.

## Servo Product Features

SF81 injection molding machine is developed by Veichi, which has the following characteristics.

High saving rate of 40% -75%.

The servo drives, system pressure, flow dual closed-loop system of the SF81 injection molding machine are provided in accordance with the flow and pressure in practical to overcome the high energy consumption of the system. In high-traffic work phase the motor runs according to setting motor speed, in low-traffic work phase the motor speed decreases to reduce the actual energy consumption.

### Fast response, high productivity

SF81 injection machine servo drive has fast response with its pressure rise and flow fast rise time reaching 50ms, which improves the response speed of the hydraulic system and reduces the movement conversion time; when the injection molding machine hydraulic system automatically runs and when a valve was opened, the system pressure will instantly drop, the servo system can quickly add fuel within 50MS to restore pressure to the set value.

### Precision pressure stability

SF81 injection machine servo drive has strong ability and the pressure closed-loop control mode makes the system pressure very stable with the pressure fluctuation less than  $\pm 0.7$ bar, which improves the quality of plastic products; SF81 injection machine servo drive can run according to the computer pressure flow curve to provide the conditions for a variety of technology products.

### High repeatability, and saving material

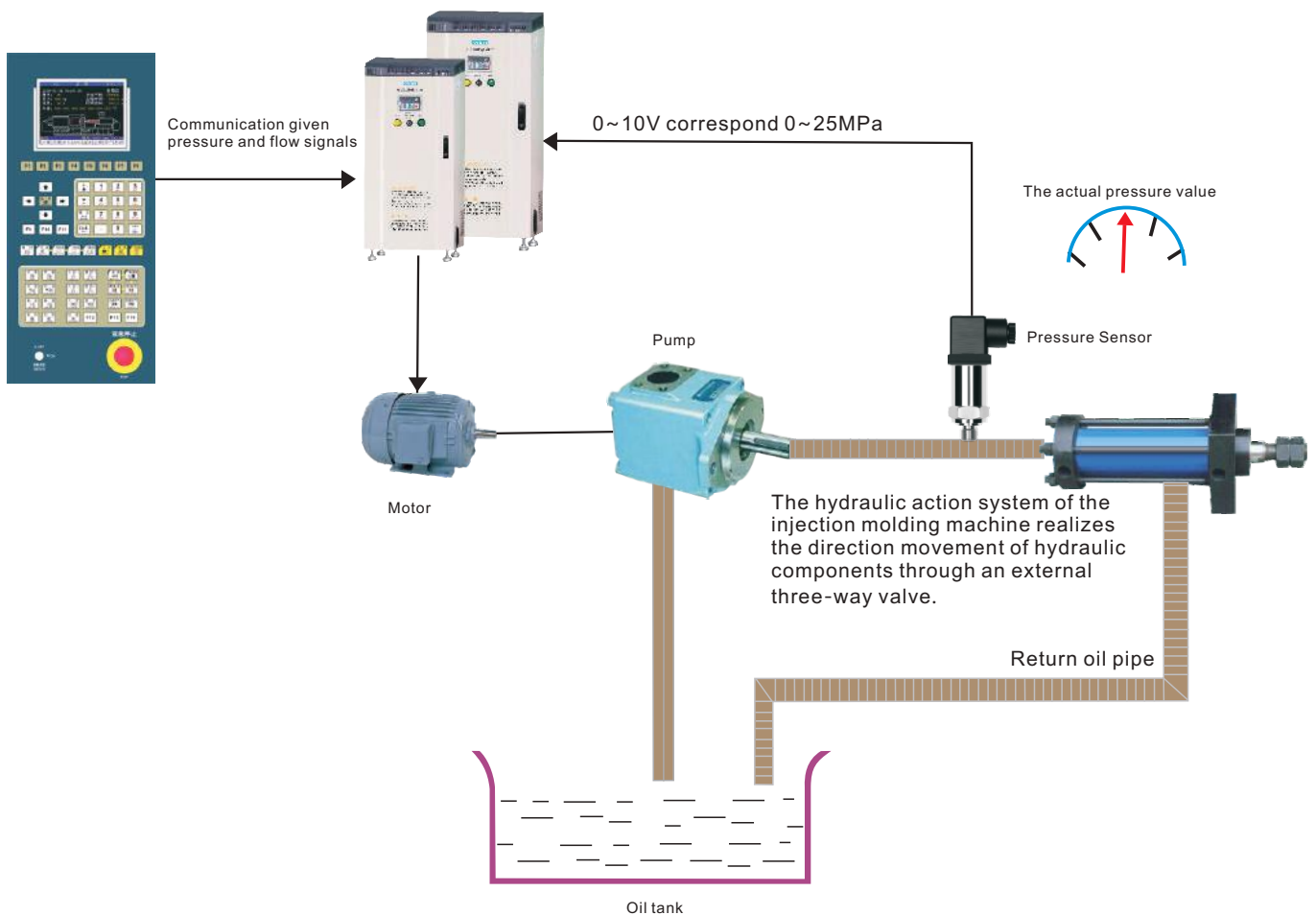
SF81 injection machine servo drive adopts closed-loop speed control with high repetition accuracy, which overcomes the disadvantages of traffic changes of ordinary induction motor quantitative pump system due to speed changes and other changes, thus causing the decreasing of injection molding product yield rate.

### Low oil temperature rising

there's no need for cooling water at 35 room temperature when oil temperature rising of injection molding machine rises from 8 to 10, and the cooler dosage is greatly reduced, extending the life of the machine especially the hydraulic oil.

## Energy-saving programs

Injection molding machine hydraulic system is system that has large pressure and flow fluctuations ,and during mold ,mold , plastic injection ,working stages ,the pressure and flow rate is regularly changed .Most of the time ,the actual fuel of the load is less than the volume of pump fuel supply ,causing the overflowing of hydraulic oil under high pressure through relief valve and proportional valve overflow .The overflow part not only did not do any useful work ,but also generates heat ,causing the hydraulic oil heats .Therefore ,based on the current operating state and the pressure and speed of the injection molding machine ,automatically adjust the speed and amount of oil pump ,so that the actual amount of oil and the actual load flow of injection molding machine are consistent at any work stage ,eliminating flooding phenomenon and saving pump motor power consumption .SF81 injection molding machines servo drive uses oil control motor to provide the appropriate speed at various stages ,so that the vane pump turns into energy saving variable pump to achieve the best energy -saving state of injection molding machine .



SF81 injection machine servo drive installation diagram

When the pressure is not established, the oil pressure is established by the hydraulic flow control; when the pressure has been established, the oil pressure is controlled by the PID to make it stable at a given value. SF81 injection machine servo drive controls pump speed through its own PID algorithm, so that the hydraulic pump output fast and quasi to reach the pressure settings on injection molding machine operation panel.

## Comparison of various energy-saving equipment schematic

### Comparison of various energy-saving system

Compare Items	Common quantitative pump system	Variable Pump System	Energy converter system	Servo power system
Energy Consumption	High	Medium	Lower	Low
Stability	Medium	Medium	Low	High
Dynamic Response	Medium	Medium	Slow	fast
Noise	Medium	High	Medium	Low
Oil	High	Medium	Medium	Low
Maintenance cost	Low	High	Medium	Medium
Selling price	Low	Medium	Medium	Medium

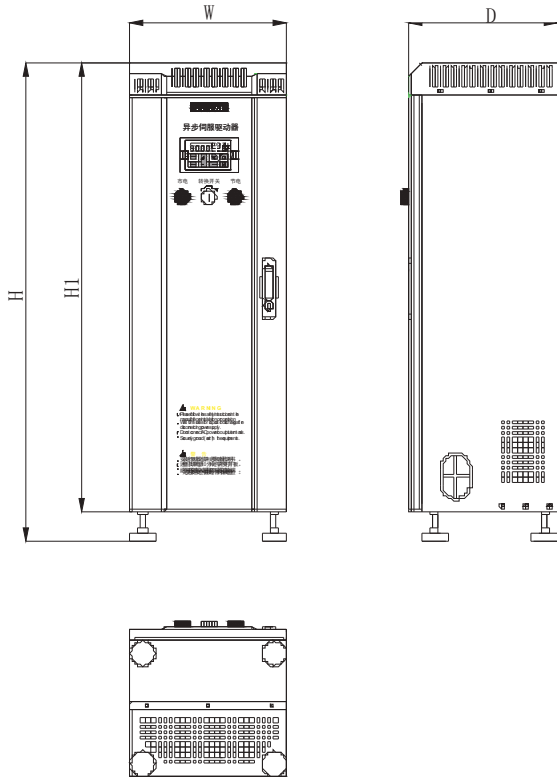
### Quantitative pump servo system upgrade to energy savings budget

Clamping force injection molding machine	Motor Power	General condition power consumption per hour	Power consumption per hour after upgrade	Power saved per year	Value of power saved per year
T	KW.h	KW.h/h	KW.h/h	KW.h/year	Yuan/year
58T	7.5	3.375	2.025	17739	¥ 14 191
90T	11	4.95	2.97	26017	¥ 20 814
120T	13	5.85	3.51	30748	¥ 24 598
160T	15	6.75	4.05	35478	¥ 28 382
200T	18.5	8.325	4.995	43756	¥ 35 005
250T	22	9.9	5.94	52034	¥ 41 628
300T	30	13.5	8.1	70956	¥ 56 765
360T	37	16.65	9.99	87512	¥ 70 010
450T	45	20.25	12.15	106434	¥ 85 147
530T	55	24.75	14.85	130086	¥ 104 069
650T	60	27	16.2	141912	¥ 113 530
800T	74	33.3	19.98	175025	¥ 140 020
900T	82	36.9	22.14	193946	¥ 155 157
1000T	90	40.5	24.3	212868	¥ 170 294
1250T	110	49.5	29.7	260172	¥ 208 138
1500T	120	54	32.4	283824	¥ 227 059

Explanation:

1. In general conditions hourly power consumption of 45% for load calculation .
2. After upgrading the saving effect is calculated at an average of 60% ,and the energy saving effect of 70% or more products is higher than 60% .
3. Annual saving power is calculated on full -cost basis ,which is 24 hours ,365 days .
4. Electricity is calculated on 0.8 Yuan per kWh .
5. Depending on the specific conditions ,there are some differences over the budgets, the data in the table are for reference only .

## SF81 Intallation Dimension



Model	W	H	H1	D
SF81-T3-7R5ZK	230	695	635	220
SF81-T3-011ZK				
SF81-T3-015ZK	256	810	750	285
SF81-T3-018ZK				
SF81-T3-022ZK	300	910	850	285
SF81-T3-030ZK				
SF81-T3-037ZK	400	930	870	340
SF81-T3-045ZK				
SF81-T3-055ZK	440	980	920	390
SF81-T3-075ZK				

## Customer service and support



Long product warranty period:

Servo products provide two years of free warranty. (Excluding oil pump)

Sales network technical support

End customers using guidance, training of maintenance personnel

Anomaly analysis, troubleshooting

Fast service response

South East Region 24 hours

Other areas 48 hours

Injection molding machine factory supporting technical support

Match with machine, selection is specific, and sales requirements is specific.

Commissioning training, instructions and maintenance textbook editing;

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