

Injection Molding Machine

ES45

SPECIFICATIONS

Clamping Unit	Hydraulic			
Clamping force	U.S. tons	45		
Clamp opening force	U.S. tons	2.48		
Clamp stroke (max.)	inches	13.19		
Mold height (min.-max.)	inches	5.79 x 18.98		
Daylight (min.-max.)	inches	5.79 x 18.98		
Platen size (HxV)	inches	16.93 x 16.93		
Distance between tie-rods (HxV)	inches	12.00 x 12.00		
Tie rod diameter	inches	1.97		
Hydraulic ejector force	tons	2.83		
Hydraulic ejector stroke	inches	3.94		
Injection Unit	150			
Shot size (1 + 4)	ounces	2.07	2.98	4.05
Injection capacity	cu. inches	3.89	5.60	7.63
Screw diameter	inches	0.984	1.181	1.379
Plasticizing capacity (max.)	lbs./hr.	156	204	298
Recovery rate	ozs./sec.	0.69	0.90	1.32
Injection rate at max. pressure (2 + 3)	cu. in./sec.	3.41	4.91	5.69
Injection rate (regenerative) (2 + 3)	cu. in./sec.	N/A	N/A	N/A
Injection velocity at max. pressure (2 + 3)	inches/sec	4.49		
Injection velocity (regenerative) (2 + 3)	inches/sec.	N/A		
Screw stroke	inches	5.118		
Injection pressure (max.)	p.s.i.	32,495	22,500	18,573
Injection pressure (regenerative)	p.s.i.	N/A	N/A	N/A
Screw speed range (5)	rpm	25-470		
Screw torque (5)	in./lbs.	1,996		
Screw L/D ratio		20:1		
Nozzle stroke	inches	7.87		
Nozzle force	tons	4.25		
Hydraulics				
Pump capacity	gpm	12.41		
System pressure	p.s.i.	2,320		
Oil reservoir capacity	U.S. gal.	34		
Electrics				
Power supply (standard)	volt	230/460/575/3/60		
Total rated HP		16		
Number of heat control zones		3 + nozzle		
Total heating wattage	kw	3.2	3.5	3.8
General				
Dry cycle performance	sec.	1.5		
Water requirements (max.)	gpm	4.5		
Machine dimensions (l.w.h.)	inches	145 x 50 x 69		
Machine weight	lbs.	4,000		
Hopper capacity	lbs.	70		

Notes: 1. Based on styrene material. 2. Calculated. 3. Can be increased with accumulator. 4. Realistic capacity (not calculated). 5. Can be increased.
 General Notes: Machines available with different shot sizes upon request. Increased injection pressure available on certain models. N/A = not applicable.

STANDARD EQUIPMENT

Clamp
 SPI standard platen and K.O. pattern
 Multi-stroke hydraulic ejection, speed and pressure controlled with quick centre K.O. coupling
 2 speeds opening & closing
 Heavy tie-bars, large bearing surface area for moving platen
 Water-cooled stationary platen
 Mechanical safety dropbar with limit switch
 Hydraulic, electric and electronic safety gate interlock
 Low pressure mold protection with digital setting

Injection
 20:1 L/D, nitrided barrel & screw
 Non-return ring or ball check valve
 Digital screw RPM indicator
 2 injection speeds
 Second stage injection pressure time and stroke dependent
 Cold start protection
 Discharge hopper chute with slide for hopper movement
 Water-cooled feed throat with thermometer
 Programs for sprue break, decompression, intrusion, back pressure and transition boost to hold

Hydraulics
 Fully proportional linearized hydraulics
 Variable displacement pump
 10 micron pressure filtration with electrical dirt alarm timer magnet
 Oil tank with temperature and level indicator
 Selective readouts for all pressures
 Oil prewarming system with high and low limit, L.E.D. temperature readout, electrical water valve and closed loop oil temperature control

Electric & Electronic
 REPRO 4W control for digital setting of pressures, speeds, timers and strokes
 Selectable manual, semi-automatic and fully automatic modes
 Diagnostics with 18 L.E.D. alarm indicators
 L.E.D. indicators for sequence, solenoids and position controls
 Electronic temperature controls for barrel
 Electronic temperature control for nozzle
 Delay timers for plasticizing and sprue break
 Cycle and hour counters
 Circuit breakers i.p.o. fuses
 Ventilated control panel
 High energy-efficient, totally enclosed fan cooled motor(s)
 hydro approved (equivalent of C.S.A. and U.L.)

General
 Conforms to latest O.S.H.A. standards
 Easy access to motors, pumps & hydraulics
 Large, open drop area for automation

OPTIONAL EQUIPMENT

Clamp
 Extended tie-bars.
 Mechanical stroke limiter.
 Water-cooled, heated, insulated and nickel-plated platens.
 Special K.O. and platen hole patterns.
 Core pulls, unscrewing and indexing arrangements.
 Air blow-off units with timer & valve.
 Injection compression program.
 Mold venting program.

Injection
 Bi-metallic barrels.
 Ventad barrels.
 Selective screws for specialized materials.
 Special L/D or compression ratio screws.
 Barrel & screw arrangements for Thermoset, L.I.M., Rubber, PVC, and Torton.
 Smaller or larger than standard selectable shot sizes.
 Heaterless, filter, reverse taper and extra long nozzles.
 Spring-loaded, hydraulic & pneumatic shut off nozzles.
 Fully enclosed or insulated heatshield for barrel.
 Screw anti-rotation device.

Hydraulics
 Larger pump and motor for increased drive capacity.
 Larger motor and extra pump for independent screw drive.
 Larger motor and extra pump for K.O., unscrewing or core pull on the fly.
 Accumulator for K.O., unscrewing or core pull on the fly.
 Accumulator for faster injection.
 High R.P.M. or high torque screw drive.
 Fine reading and adjustment of back pressure.

Electric & Electronic
 CC 80 Microcomputer total machine control with closed loop process control.
 Micrograph, microplast, computer interface & printer.
 EC 88 Microcomputer total machine control with proportional closed loop process control.
 Bargraphs, microplast, computer interface and printer.
 Host computer arrangement.
 Delay timers for injection, suck back or other.
 Timer to turn on heaters in advance.
 Timer to shut off machine after cycle set point is reached.
 Try Again program.
 Mold wiper & robot programs.
 Infra-red light curtain ejection control.
 Additional heating zones for machine, mold, hot runner or hot sprue.
 Heater & booster transformers.
 Power capacitor, part start winding or Star Delta.
 Ceramic or air-cooled heaterbands.
 Selected process controls.

General
 Machine levelling/vibration mounts.
 Cooling-water distributor with flow indicators with or without thermometers.
 Drawer-type and other hopper magnets.
 Stainless steel hopper, purge shield, etc.
 Double hopper with indexing for rapid resin change.
 Special painting of machine as per customer's specs.
 Pneumatic operator safety gate.
 Tool drawers in machine frame.
 Alarm bell in addition to standard alarm light.
 Recommended spare parts package.
 Automated handling systems.
 Some options may not be available on all machines.

ENGEL