

SPECIFICATIONS

| Clamping Unit | Toggle | | | | |
|---|--------------|--|--------|--------|--------|
| Clamping force | U.S. tons | 82.5 | | | |
| Clamp opening force | U.S. tons | 12 | | | |
| Clamp stroke (max.) | inches | 11.81 | | | |
| Mold height (min.-max.) | inches | 5.91 x 14.96 | | | |
| Daylight (min.-max.) | inches | 5.91 x 26.77 | | | |
| Platen size (HxV) | inches | A - 20.08 x 21.73 O/R B - 22.44 x 21.73 | | | |
| Distance between tie-rods (HxV) | inches | A - 13.62 x 13.62 O/R B - 15.98 x 13.62 | | | |
| Tie-rod diameter | inches | 2.36 | | | |
| Hydraulic ejector force | tons | 2.80 | | | |
| Hydraulic ejector stroke | inches | 3.94 | | | |
| Injection Unit | 240 | | | | |
| Screw diameter | mm | 30 | 35 | 40 | 45 |
| Screw diameter | inches | 1.181 | 1.378 | 1.575 | 1.772 |
| Shot size (1) | ounces | 3.8 | 5.2 | 6.7 | 8.5 |
| Injection capacity | cu. inches | 6.90 | 9.39 | 12.26 | 15.52 |
| Plasticizing capacity (max.) | lbs./hr. | 150 | 218 | 273 | 270 |
| Recovery rate | ozs./sec. | 0.67 | 0.97 | 1.21 | 1.20 |
| Injection rate at max. pressure (2 + 3) | cu. in./sec. | 4.79 | 6.52 | 5.67 | 7.71 |
| Injection rate (regenerative) (2 + 3) | cu. in./sec. | N/A | | | |
| Injection velocity at max. pressure (2 + 3) | inches/sec. | 4.37 | 4.37 | 3.91 | 2.91 |
| Injection velocity (regenerative) (2 + 3) | inches/sec. | N/A | | | |
| Screw stroke | inches | 6.30 | | | |
| Injection pressure (max.) (4) | p.s.i. | 32,979 | 24,229 | 27,897 | 22,042 |
| Injection pressure (regenerative) | p.s.i. | N/A | | | |
| Screw speed range (4) | rpm | 25-344 | 25-344 | 25-344 | 25-274 |
| Screw torque (4) | in.-lbs. | 3,089 | 3,089 | 3,089 | 4,452 |
| Screw L/D ratio | | 20 : 1 | | | |
| Nozzle stroke | inches | 11.81 | | | |
| Nozzle force | tons | 4.86 | | | |
| Hydraulics | | | | | |
| Pump capacity | gpm | 17.70 | | | |
| System pressure | p.s.i. | 2,320 | | | |
| Oil reservoir capacity | U.S. gal. | 42 | | | |
| Electrics | | | | | |
| Power supply (standard) | volt | 230/460/575/3/60 | | | |
| Total rated HP | | 20 | | | |
| Number of heat control zones | | 3 + N | 3 + N | 3 + N | 4 + N |
| Total heating wattage | kw | 4.96 | 6.75 | 7.35 | 8.80 |
| General | | | | | |
| Dry cycle performance | sec. | 1.5 | | | |
| Water requirements (max.) | gpm | 6.0 | | | |
| Machine dimensions (l x w x h) | inches | 167 x 58 x 80 | | | |
| Machine weight | lbs. | 8,500 | | | |
| Hopper capacity | lbs. | 75 | | | |

STANDARD EQUIPMENT

Clamp
 SPI standard platen and K.O. pattern
 Smooth, fast-acting double toggle
 Multi-stroke hydraulic ejection, speed and pressure controlled with quick centre K.O. coupling
 2 specific opening and closing
 Adjustable support under moving platen
 Electrically gear-driven central mold height adjustment
 Heavy tie-bars, large bearing surface area for moving platen
 Water-cooled stationary platen
 Central automatic lubrication with pressure system protection
 Mechanical safety droptail
 Hydraulic, electric and electronic safety gate interlock
 Divided safety gate
 Low pressure mold protection with digital setting

Injection
 20 : 1 L/D, nitrated barrel & screw
 Non-return ring or ball check valve
 Digital screw RPM indicator
 3 injection speeds
 Second stage injection pressure time and stroke dependant
 Gold start protection
 Rapid screw pulling from back
 Discharge hopper chute with side 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
 Filter 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 & Electronics
 REPRO 4WH control for digital settings of all pressures, speeds, strokes and temperatures
 Selectable manual, semi-automatic and fully automatic modes
 Potentiometric position control for clamp, ejection, injection & nozzle
 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
 Separate controls for heat & drive
 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

Notes: 1. Based on styrene material
 2. Calculated
 3. Can be increased with accumulator
 4. Can be increased
 5. Adjustable support under moving platen is standard with large platen

General Notes: Machines available with different shot sizes upon request. Increased injection pressure available on certain models. N/A = not applicable. O/R = on request

OPTIONAL EQUIPMENT

Clamp
 Hydromechanical coining system
 Manual or hydraulic quick mold mounting systems
 Automatic mold change system
 Extended tie-bars
 Closed loop clamp force control for automatic setting and correcting of tonnage
 Digital tonnage indicator
 Direct clamp force indicator
 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
 Vented barrels
 Selective screws for specialized materials
 Special L/D or compression ratio screws
 Barrel & screw arrangements for Thermostat, L.I.M., Rubber, P.V.C. and Teflon
 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
 Increased injection pressure
 High R.P.M. or high torque screw drive
 Fine reading and adjustment of back pressure

Electric & Electronic
 Microcomputer total machine controls with closed loop process control
 Micrograph, microplast, computer interface & printer
 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
 Host computer
 SPC & SPQC programs

General
 Machine levelling/vibration mounts
 Cooling-water distributor with flow indicators with or without thermometer's
 Drawer-type and other hopper magnets
 Stainless steel hopper, purge shield, etc.
 Double hopper with indexing for rapid resin change
 Quick barrel exchange
 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

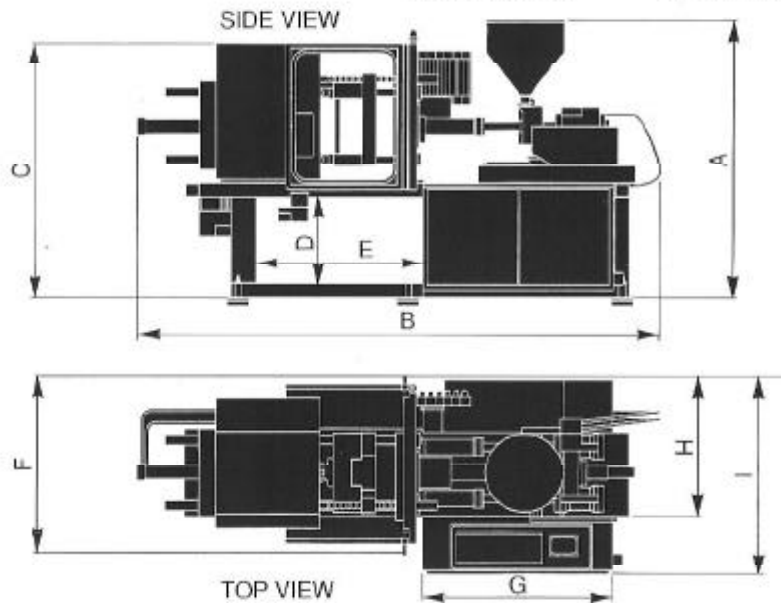
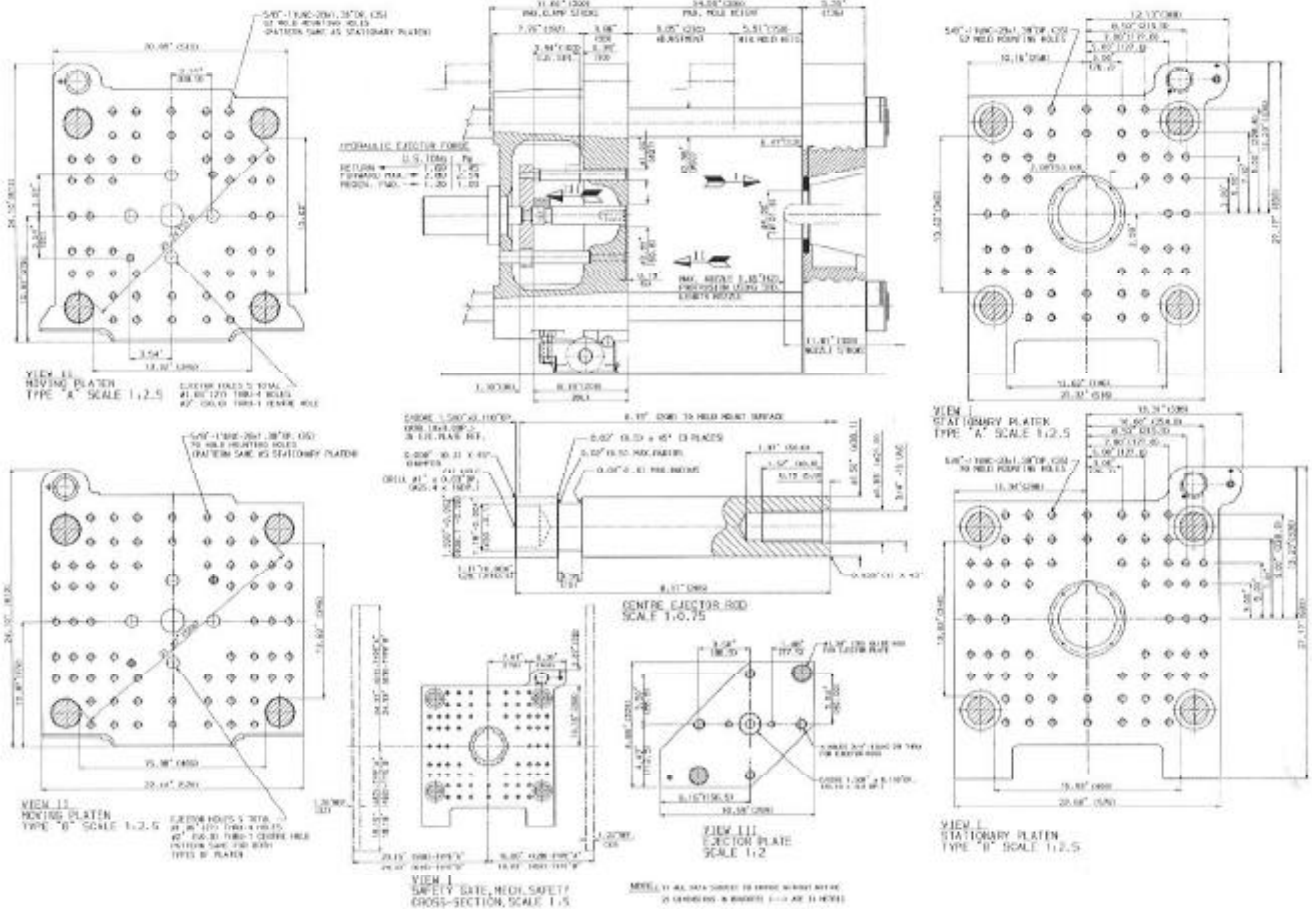
Some options may not be available on all machines

ISSUED APRIL 1990

ENGEL

Injection Molding Machine

ES 80



| Machine measurements in inches | |
|-----------------------------------|-----|
| A | 80 |
| B | 167 |
| C | 72 |
| D | 24 |
| E | 43 |
| F | 50 |
| G | 54 |
| H | 40 |
| I | 58 |

TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.

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