

Engel Injection Molding Machine

INSERT 700H/200 US - VERTICAL CLAMP / HORIZONTAL INJECTION

CLAMP

Clamp force	US tons	200
Clamp opening force	US tons	14
Clamp stroke (max.)	inches	15.75
Mold height (min - max)	inches	15.75 ⁵ - N/A
Daylight (min - max)	inches	15.75 ⁵ - 31.50
Platen size (HxV)	inches	31.89 x 17.72

ROTARY TABLE

Rotary table diameter	inches	46.46
Mold pitch circle diameter	inches	25.59
Hydraulic ejector stroke	inches	6.3
Ejector penetration (above table)	inches	3.1
Hydraulic ejector force	US tons	1.8

INJECTION 700

Screw diameter	mm	45	50	55
Screw diameter	inches	1.772	1.969	2.165
Shot size ¹⁺²	oz	10.3	12.7	15.4
Injection capacity	in ³	19.4	24.0	29.0
Recovery rate ¹⁺²	oz/sec	0.9	1.2	1.6
Plasticizing capacity ¹⁺²	lbs/hr	197	268	349
Injection rate at max. press. ³⁺⁴	in ³ /sec	9.2	11.4	13.8
Injection rate (regenerative) ³⁺⁴	in ³ /sec	12.0	14.9	18.0
Injection velocity at max. press. ³⁺⁴	in/sec	3.7		
Injection velocity (regenerative) ³⁺⁴	in/sec	4.9		
Screw stroke	inches	7.87		
Injection pressure (max.) ⁴	psi	30000	24708	20416
Injection pressure (regenerative) ⁴	psi	22986	18931	15643
Screw speed range (min=25)	rpm	238		
Screw torque ⁴	ft-lbs	813		
Screw L/D ratio		20:1		
Nozzle stroke	inches	15.8		
Nozzle reach to mold center	inches	5.0		
Nozzle force	US tons	4.0		
Nozzle height (min-max) ⁴	inches	5.0 - 12.0		

HYDRAULICS

Pump capacity (required)	gpm	31.4
Oil reservoir capacity	US gal	106

ELECTRICS

Power supply available	volts	460 / 575 - 3PH / 60Hz
Total rated horsepower	HP	40
Number of heat control zones		4+Nozzle
Total heating wattage	kw	10.3 11.3 12.7

GENERAL

Water requirements (max)	gpm	11
Machine dimensions (LxWxH)	inches	174 x 106 x 123
Machine weight	lbs	33000
Hopper capacity	lbs	163
Suitable Engel robots		ERC 23, ERV 31

NOTES:

1. Based on polystyrene material.
2. Calculated
3. Can be increased with accumulator.
4. Can be increased.
5. Smaller mold height settings optional

All data subject to change without notice
Issue Date: 10/30/02

INSERT 700H/200 US
VERTICAL CLAMP
 Data Sheet

ENGEL

STANDARDS & OPTIONS

STANDARD EQUIPMENT

Injection

- Nitrided barrel and screw
- Non-return ring check valve
- 10 step injection speed profiling
- 10 step holding pressure profiling
- 5 step back pressure profiling
- 5 step screw speed profiling
- Digital screw speed (RPM) display
- Digital injection time monitoring
- Screw recovery time monitoring
- Boost cut-off: time, stroke and hydraulic pressure dependent (switch-over by cavity pressure is optional)
- Automatic cushion monitoring and control
- Cold start protection
- Injection unit swivel
- Quick barrel change (80cc-330cc)
- Precision linear bearings for carriage movement
- Hopper discharge chute
- Feedthroat prepared for water-cooling
- Feedthroat with thermometer
- Quick disconnects for heater bands (80cc-330cc)
- Increased injection pressure (via regenerative circuit, screen selectable)
- Programs for sprue break, decompression, and intrusion
- Pneumatic purge shield
- Single-point nozzle height adjustment

Clamp

- Pneumatically actuated safety gate
- Rigid bridge-type frame
- Mechanical safety dropbar
- 3 speed opening and closing
- Hydraulic and electric safety gate interlocks
- Direct hydraulic clamp with integral quick close cylinder
- Precision linear bearings for platen stroke
- Moving platen prepared for water cooling
- 5 speed / pressure / position mold protection
- Hydraulic counterbalance circuit
- Automatic clamp force control

Rotary Table

- Rigid base plate for full table support
- Lifting table design for minimal wear
- Precise table positioning via "shot pin" locating mechanism
- Multi-stroke hydraulic ejection, proportional speed control, independent of injection/screw feed
- 2-position reciprocating 180 deg. table

Hydraulics

- Fully proportional linearized hydraulic system
- Automatic calibration of proportional hydraulic valves and transducers
- Clogged filter indicator
- Closed loop oil temperature regulation with pre-warming system

Hydraulics (continued)

- Oil level indicator with level switch
 - Pressure selector gauge
 - Pressure compensated variable displacement pumps
 - Energy efficient totally enclosed fan-cooled motors
- #### Controls, Electrics & Electronics
- Microprocessor control with high resolution flat color screen
 - RISC Multiple processor architecture (distributed intelligence)
 - Built-in disk drive for data up/down loading
 - Mold set-ups via machine CPU
 - Quick machine set up via single screen
 - Linear transducers for measurement of the clamp, injection, carriage and ejector positions
 - Automatic cycle monitoring
 - Digital display of actual values
 - Current function display
 - Self-diagnostics, monitoring, alarms
 - Automatic screen shut-off
 - Automatic balancing of heat zones during warm-up
 - Auto barrel stand-by temperature when machine in alarm condition
 - Automatic reject signal
 - US/metric units conversion (instant changeover)
 - User-defined programmable text pages. Keyboard extra.
 - Self-tuning temperature controls
 - History reporting of alarm conditions and set-up changes
 - Resettable cycle and non-resettable hour counters
 - Interface port for external data carrier and calibration
 - Anti-tie down cycle start safety palm buttons
 - Pivoting cabinet for operator interface and display

OPTIONAL EQUIPMENT

Injection

- Hardened screws and bi-metallic barrels
- Specialty screws and screw tips for a wide variety of applications
- LIM, Thermoset, PVC, BMC, PIM, Gasmelt, MuCell and other packages
- Increased wattage & air-cooled heater bands
- Shut-off nozzles
- Insulating blanket for barrel
- Hopper or drawer magnets
- Automatic motorized nozzle height adjustment

Clamp

- 3 or 4 mold stations with rotary union for mold water cooling at table center
- Hydraulic quick mold mounting system (moving platen only)
- Safety key switch for entry during ejector and core movement

Clamp (continued)

- Air blow-off valve
- Infrared light curtain in place of safety gate
- Positive return of mold ejector
- Hydraulic ejector on moving platen
- Additional fixed ejector
- Hot fluid connections through rotary union at table center
- Corepull(s) and unscrewing control
- Mold venting program
- Reduced minimum mold height

Hydraulics

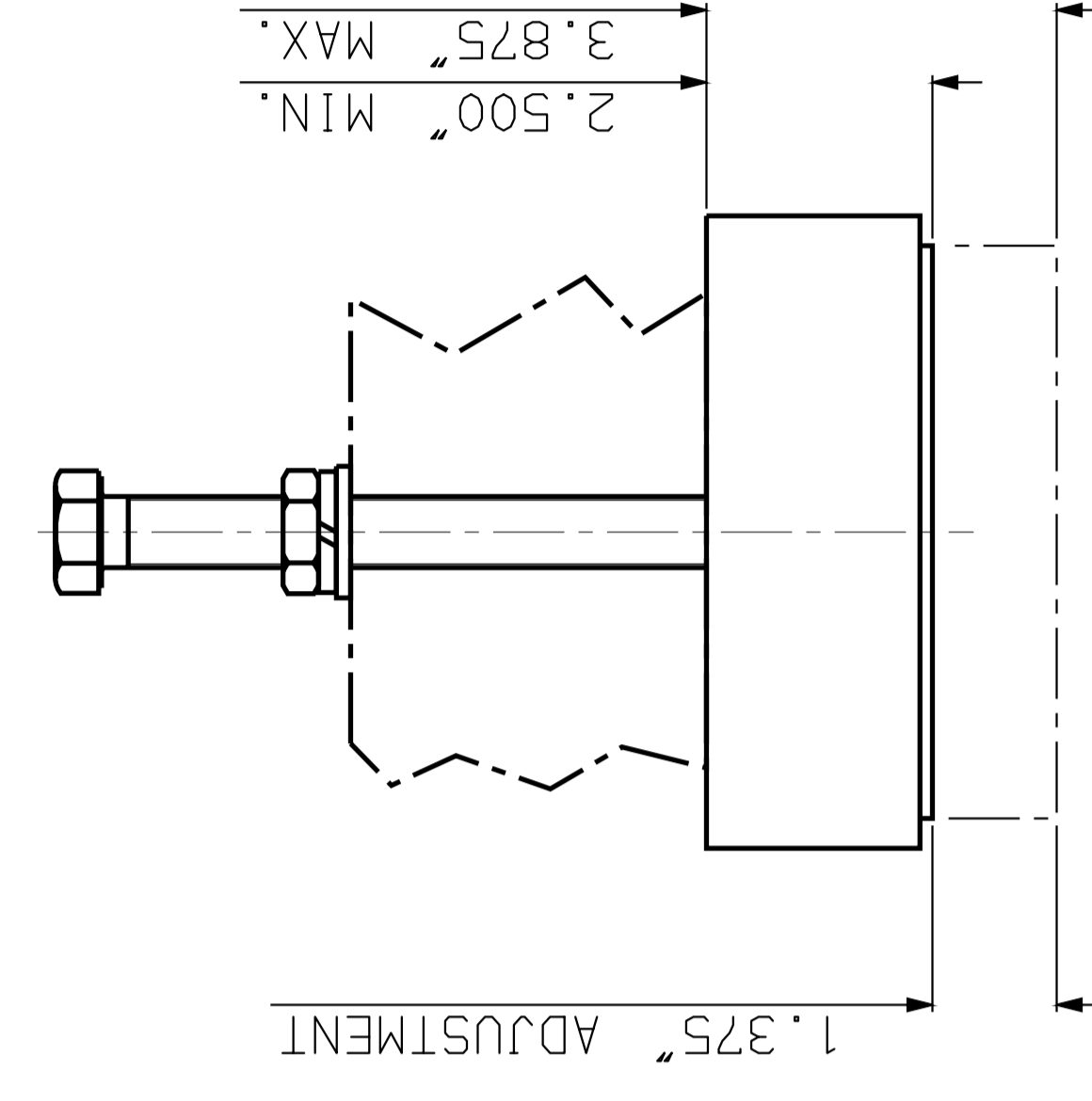
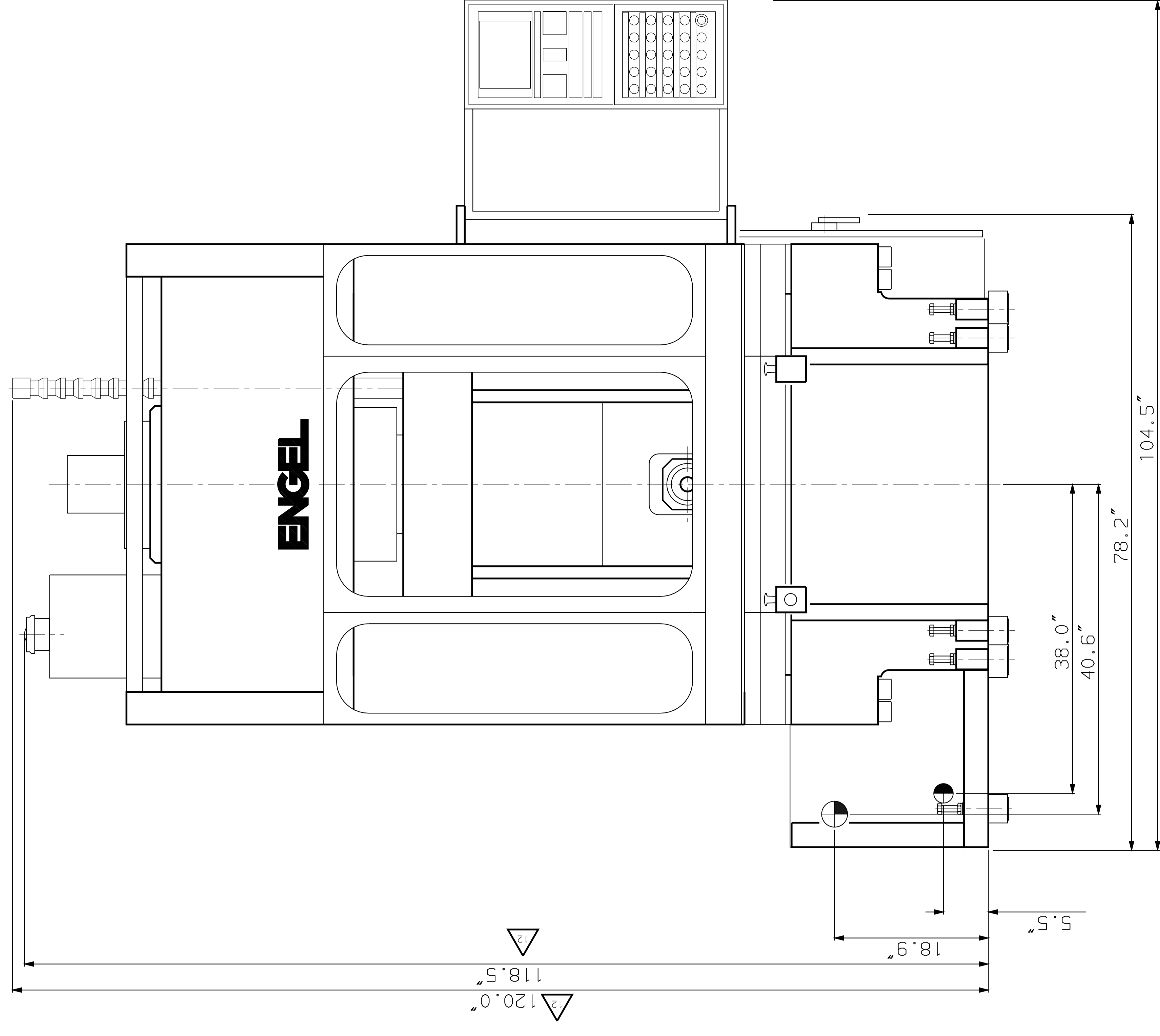
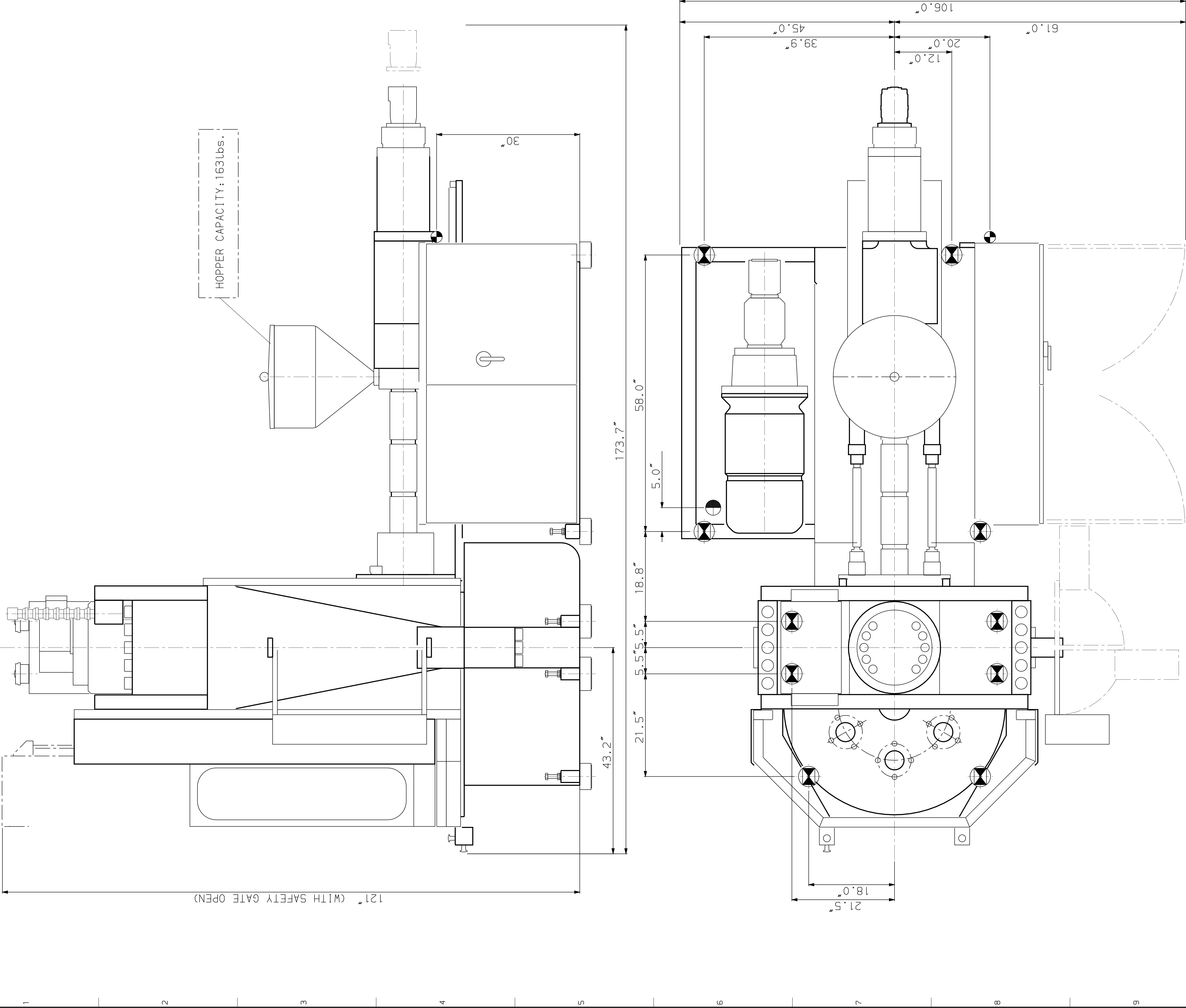
- Servo valve for closed loop injection speed, injection pressure, and screw back pressure control
- Increased hydraulic drive for increased plasticizing and injection speeds
- Accumulator system for increased injection speed or special functions
- Hot runner valve gate control (pneumatic or hydraulic)
- High torque screw drive
- By-pass oil filtration

Controls, Electrics & Electronics

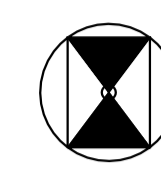
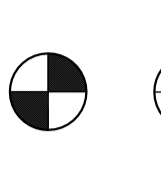
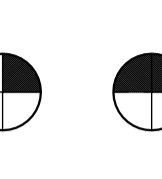

- CC100 Microprocessor control with high resolution color screen
- Microplast and Microflow software packages
- Process data graphics and reports
- SPC (Quality data Statistics)
- Automatic barrel/nozzle heat-up (7 day, 24 hour timer)
- Power factor capacitors
- Robot interface
- Auxiliary electrical receptacles
- Host computer and SPI auxiliary device interface
- Automatic shut-down for "lights-out" operation (ghost-shift program)
- Hot runner PID temperature controls
- Melt temperature or pressure monitors
- Closed loop feedthroat cooling
- Cavity pressure dependent boost cut-off
- Graphics printer
- Power supply available: 230/460/575 volts, 3Ph/60Hz
- Ammeters for barrel and nozzle zones
- Electrical input for insert confirmation
- Electrical rotary commutator for mold temp. control connections at table center

General

- Machine levelling/vibration mounts
- Waterflow controls
- Special painting of machine to customer's specifications
- Alarm sounder in addition to standard alarm light
- Spare parts packages
- Engel robots
- Training programs



LEGEND

-  -MACHINE MOUNT
-  -STD. ELE. UTILITY ENTRANCE
-  -AIR CONN. -3/8" NPT.
-  -COOLING WATER CONN. IN & OUT 3/4" NPT

MACHINE MOUNT DETAIL (OPTIONAL)

TYPIC IM51 (6 PLACES), MAXIMUM LOAD 3000 lb.
 TYPIC IM61 (4 PLACES), MAXIMUM LOAD 6000 lb.
 SCALE 1:2

MODEL	WEIGHT IN Lbs.
ES125-200/700VHRB	31480

NOTES:

1. ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
2. TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.

RELEASED
 MICROFILM
 REV. # 12

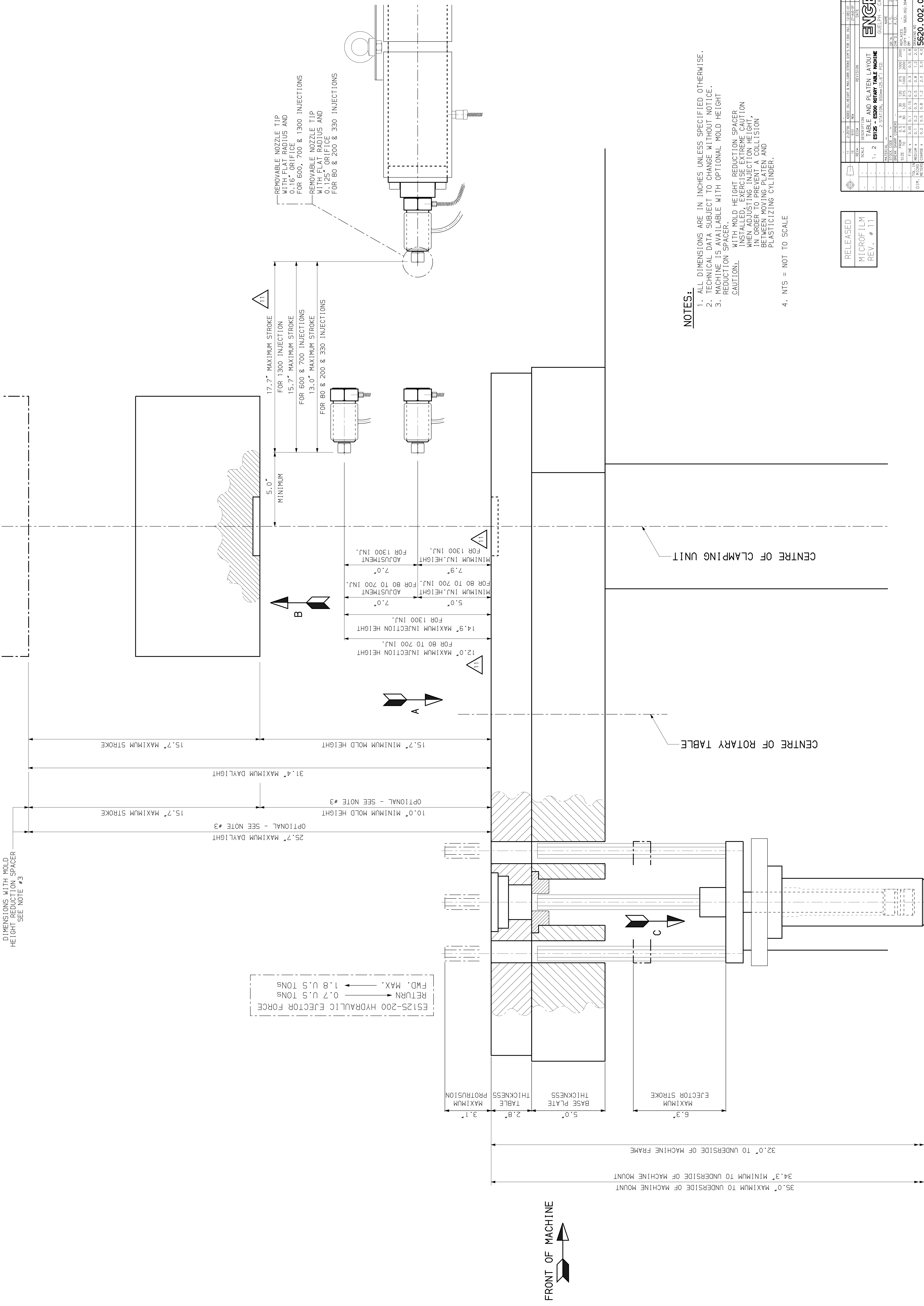
REV.	DATE	BY	CHK'D	DESCRIPTION
1	01/12/00

SCALE	DESCRIPTION
1:6	MAIN DIMENSIONS
1:2	ES125-200VHRB / 700 INJ.

REVISION	DATE	BY	CHK'D	DESCRIPTION
1	01/12/00

ITEM NO.	DESCRIPTION	QTY	UNIT	REVISION
1

DIMENSIONS WITH MOLD HEIGHT REDUCTION SPACER SEE NOTE #3



NOTES:

1. ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
2. TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.
3. MACHINE IS AVAILABLE WITH OPTIONAL MOLD HEIGHT REDUCTION SPACER.

CAUTION:
 WITH MOLD HEIGHT REDUCTION SPACER INSTALLED, EXERCISE EXTREME CAUTION WHEN ADJUSTING INJECTION HEIGHT, IN ORDER TO PREVENT A COLLISION BETWEEN MOVING PLATEN AND PLASTICIZING CYLINDER.

4. NTS = NOT TO SCALE

RELEASED
 MICROFILM
 REV. # 11

REV.	DATE	BY	CHK'D	DESCRIPTION
1	2-25-78	WJ	WJ	ISSUED FOR PRODUCTION

SCALE	DESCRIPTION
1:2	TABLE AND PLATEN LAYOUT

MATERIAL	QUANTITY	DATE
316L STAINLESS STEEL	1000	27-AUG-77

DIM.	UNIT	DESCRIPTION	REPLACES
1.0	INCH	TABLE THICKNESS	2000
0.1	INCH	NOZZLE TIP RADIUS	2000
0.125	INCH	NOZZLE TIP ORIFICE	2000
0.15	INCH	NOZZLE TIP ORIFICE	2000
0.2	INCH	NOZZLE TIP ORIFICE	2000
0.3	INCH	NOZZLE TIP ORIFICE	2000
0.5	INCH	NOZZLE TIP ORIFICE	2000
0.8	INCH	NOZZLE TIP ORIFICE	2000
1.2	INCH	NOZZLE TIP ORIFICE	2000
2.0	INCH	NOZZLE TIP ORIFICE	2000
3.0	INCH	NOZZLE TIP ORIFICE	2000
4.0	INCH	NOZZLE TIP ORIFICE	2000

DATE	BY	CHK'D	DESCRIPTION
27-AUG-77	WJ	WJ	ISSUED FOR PRODUCTION

ENGEL
 GUELPH, CANADA

5620-002-0827E
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