

Engel Injection Molding Machine

INSERT 330H/85 US - VERTICAL CLAMP / HORIZONTAL INJECTION

CLAMP

Clamp force	US tons	85
Clamp opening force	US tons	4
Clamp stroke (max.)	inches	11.81
Mold height (min - max)	inches	11.02 ⁵ - N/A
Daylight (min - max)	inches	11.02 ⁵ - 22.83
Platen size (HxV)	inches	21.65 x 13.23

ROTARY TABLE

Rotary table diameter	inches	38.39
Mold pitch circle diameter	inches	20.87
Hydraulic ejector stroke	inches	5.0
Ejector penetration (above table)	inches	2.0
Hydraulic ejector force	US tons	1.3

INJECTION **330**

Screw diameter	mm	30	35	40
Screw diameter	inches	1.181	1.378	1.575
Shot size ¹⁺²	oz	3.7	5.0	6.5
Injection capacity	in ³	6.9	9.4	12.3
Recovery rate ¹⁺²	oz/sec	0.5	0.8	0.9
Plasticizing capacity ¹⁺²	lbs/hr	118	183	200
Injection rate at max. press. ³⁺⁴	in ³ /sec	5.0	6.8	8.9
Injection rate (regenerative) ³⁺⁴	in ³ /sec	6.8	9.2	12.1
Injection velocity at max. press. ³⁺⁴	in/sec	4.6		
Injection velocity (regenerative) ³⁺⁴	in/sec	6.2		
Screw stroke	inches	6.3		
Injection pressure (max.) ⁴	psi	30000	30000	24143
Injection pressure (regenerative) ⁴	psi	22072	22072	17763
Screw speed range (min=25)	rpm	420	420	320
Screw torque ⁴	ft-lbs	260	260	325
Screw L/D ratio		23.3:1	20:1	17.5:1
Nozzle stroke	inches	13.0		
Nozzle reach to mold center	inches	5.0		
Nozzle force	US tons	2.8		
Nozzle height (min-max) ⁴	inches	5.0 - 12.0		

HYDRAULICS

Pump capacity (required)	gpm	24.0
Oil reservoir capacity	US gal	106

ELECTRICS

Power supply available	volts	230 / 460 / 575 - 3PH / 60Hz
Total rated horsepower	HP	30
Number of heat control zones		3+Nozzle
Total heating wattage	kw	7.2

GENERAL

Water requirements (max)	gpm	6
Machine dimensions (LxWxH)	inches	129 x 106 x 118
Machine weight	lbs	16500
Hopper capacity	lbs	44
Suitable Engel robots		ERC 23, ERV 21

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 330H/85 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

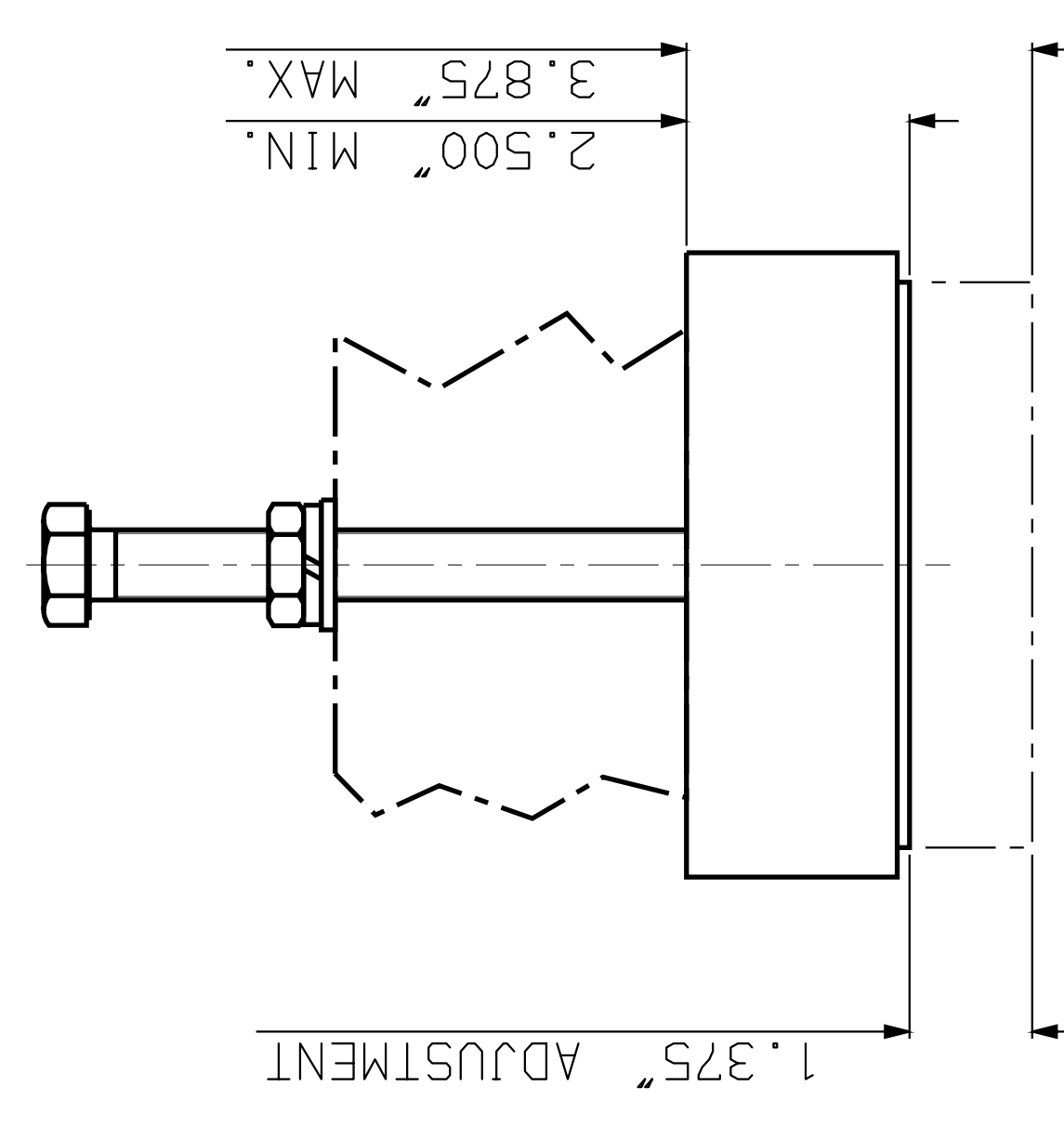
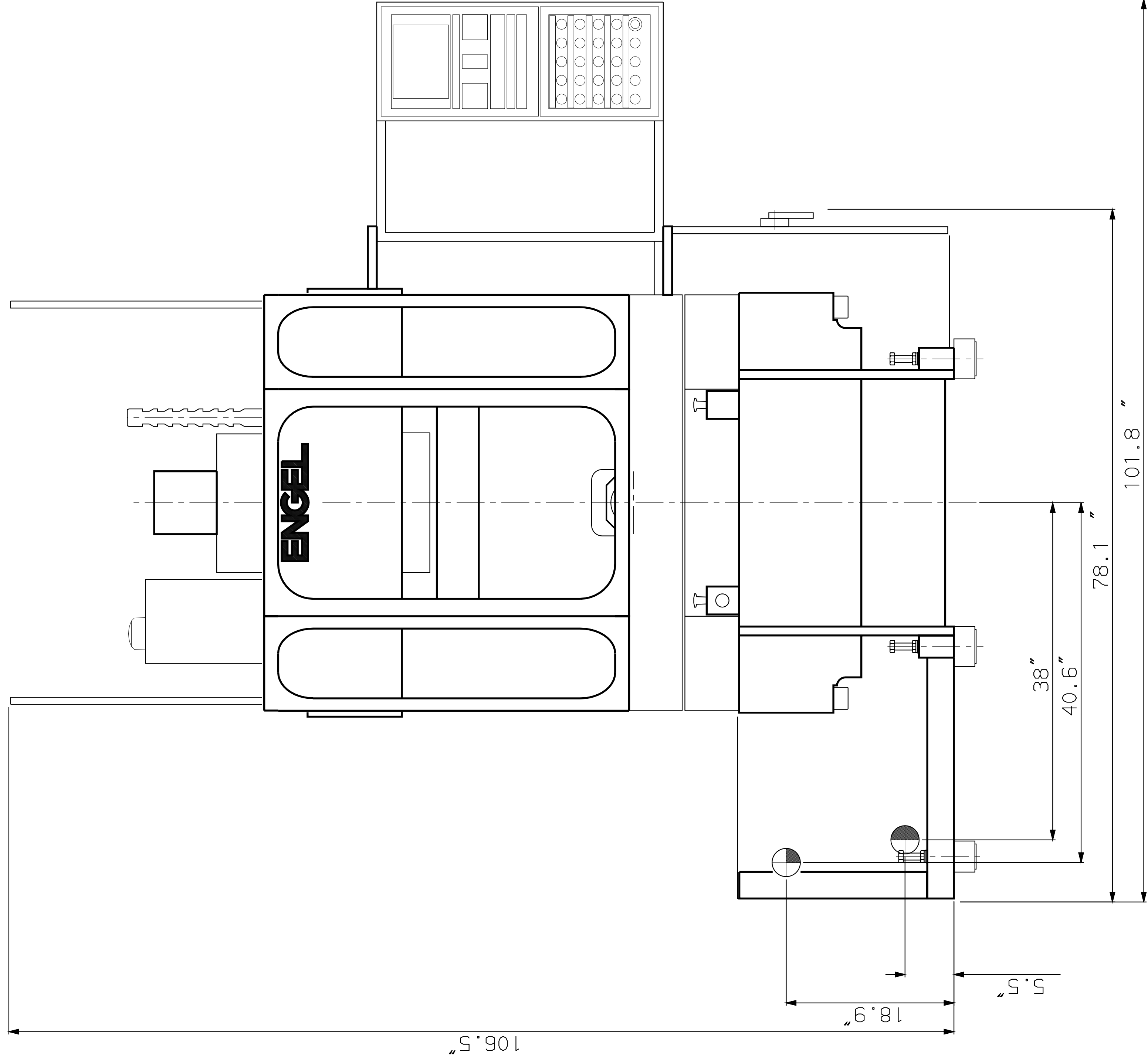
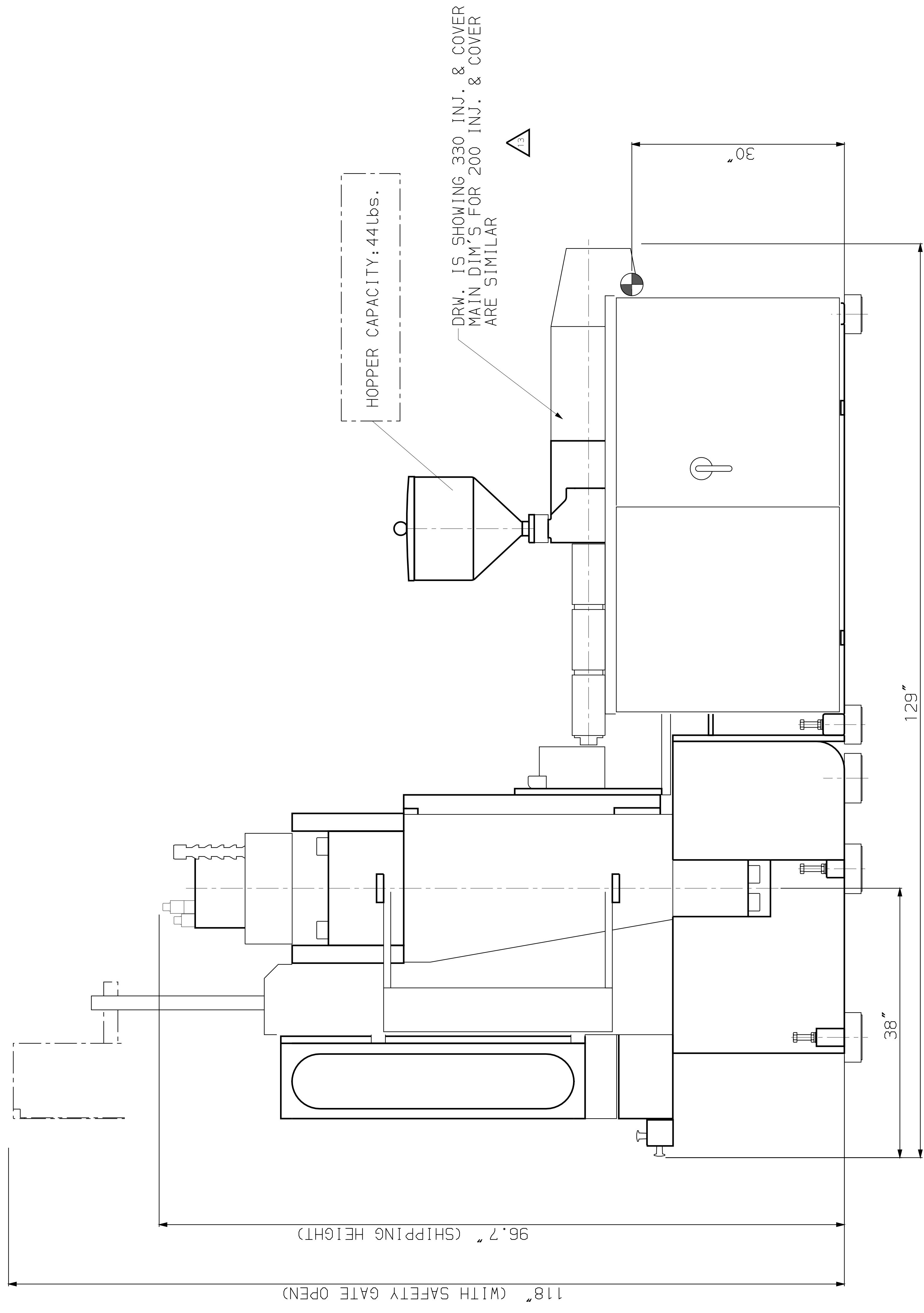
Controls, Electrics & Electronics

- 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

A B C D E F G H J K L M N



MACHINE MOUNT DETAIL (OPTIONAL)
 ▲ TYP. IM51 (4 PLACES), MAXIMUM LOAD 3000 Lb.
 △ TYP. IM61 (4 PLACES), MAXIMUM LOAD 6000 Lb.
 SCALE 1:2

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

MODEL	WEIGHT IN Lbs.
ES55-85VHRB / 200 INJ.	14820
ES55-85VHRB / 330 INJ.	16540

NOTES:

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

RELEASED
 MICROFILM
 REV. # 13

REV.	DATE	BY	DESCRIPTION
1.0	05/07/98	...	...
1.1	05/07/98	...	...
1.2	05/07/98	...	...
1.3	05/07/98	...	...
1.4	05/07/98	...	...
1.5	05/07/98	...	...
1.6	05/07/98	...	...
1.7	05/07/98	...	...
1.8	05/07/98	...	...
1.9	05/07/98	...	...
1.10	05/07/98	...	...
1.11	05/07/98	...	...
1.12	05/07/98	...	...
1.13	05/07/98	...	...

SCALE	DESCRIPTION
1:8	MAIN DIMENSIONS
1:1	ES55-85VHRB/200 & 330 INJ.

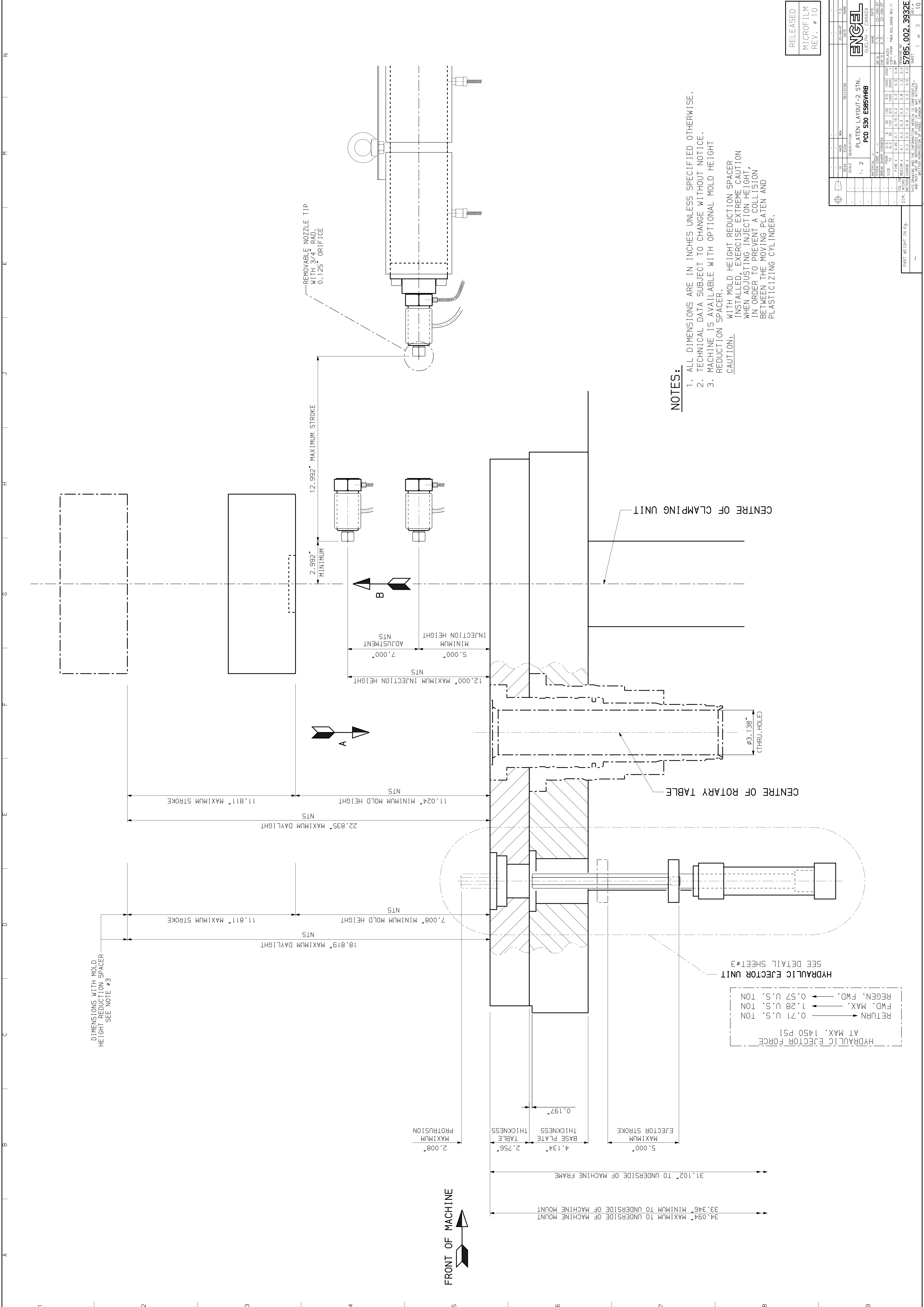
ITEM NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	ES55-85VHRB/200 & 330 INJ.	1	EA	14820	14820
2	ES55-85VHRB/330 INJ.	1	EA	16540	16540

ITEM NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	ES55-85VHRB/200 & 330 INJ.	1	EA	14820	14820
2	ES55-85VHRB/330 INJ.	1	EA	16540	16540

ITEM NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	ES55-85VHRB/200 & 330 INJ.	1	EA	14820	14820
2	ES55-85VHRB/330 INJ.	1	EA	16540	16540

ENGEL
 GIELPH - CANADA

5785.005.891BE
 SHEET 2 OF 2



DIMENSIONS WITH MOLD HEIGHT REDUCTION SPACER SEE NOTE #3

HYDRAULIC EJECTOR FORCE AT MAX. 1450 PSI

RETURN → 0.71 U.S. TON
 FWD. MAX. → 1.28 U.S. TON
 REGN. FWD. → 0.57 U.S. TON

SEE DETAIL SHEET#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 THE MOVING PLATEN AND PLASTICIZING CYLINDER.

RELEASED
 MICROFILM
 REV. # 10

REV.	DATE	BY	CHK'D	DESCRIPTION
1	11-22-77			PLATEN LAYOUT-2 STN.
2	12-22-77			PCD 530 ES65VHRB

REVISION	DATE	BY	CHK'D	DESCRIPTION
1	11-22-77			PLATEN LAYOUT-2 STN.
2	12-22-77			PCD 530 ES65VHRB

DATE	BY	CHK'D	DESCRIPTION
11-22-77			PLATEN LAYOUT-2 STN.
12-22-77			PCD 530 ES65VHRB

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 GUELPH CANADA

5785.002.9932E
 SHEET 1 OF 3

