

Engel Injection Molding Machine

INSERT 500H/150 US - VERTICAL CLAMP / HORIZONTAL INJECTION

CLAMP

Clamp force	US tons	150
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 500

Screw diameter	mm	35	40	45
Screw diameter	inches	1.378	1.575	1.772
Shot size ¹⁺²	oz	6.2	8.2	10.3
Injection capacity	in ³	11.7	15.3	19.4
Recovery rate ¹⁺²	oz/sec	0.8	1.1	1.5
Plasticizing capacity ¹⁺²	lbs/hr	176	242	330
Injection rate at max. press. ³⁺⁴	in ³ /sec	6.1	7.9	10.1
Injection rate (regenerative) ³⁺⁴	in ³ /sec	9.3	12.1	15.4
Injection velocity at max. press. ³⁺⁴	in/sec	4.1		
Injection velocity (regenerative) ³⁺⁴	in/sec	6.2		
Screw stroke	inches	7.87		
Injection pressure (max.) ⁴	psi	30000	29275	23128
Injection pressure (regenerative) ⁴	psi	22334	18875	14911
Screw speed range (min=25)	rpm	400	400	325
Screw torque ⁴	ft-lbs			
Screw L/D ratio		20:1		
Nozzle stroke	inches	17.32		
Nozzle reach to mold center	inches			
Nozzle force	US tons	2.8		
Nozzle height (min-max) ⁴	inches	5.0 - 12.0		

HYDRAULICS

Pump capacity (required)	gpm	24
Oil reservoir capacity	US gal	106

ELECTRICS

Power supply available	volts	460 / 575 - 3PH / 60Hz
Total rated horsepower	HP	30
Number of heat control zones		3+Nozzle
Total heating wattage	kw	9.2 9.2 12.2

GENERAL

Water requirements (max)	gpm	10
Machine dimensions (LxWxH)	inches	150 x 106 x 123
Machine weight	lbs	32000
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 500H/150 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

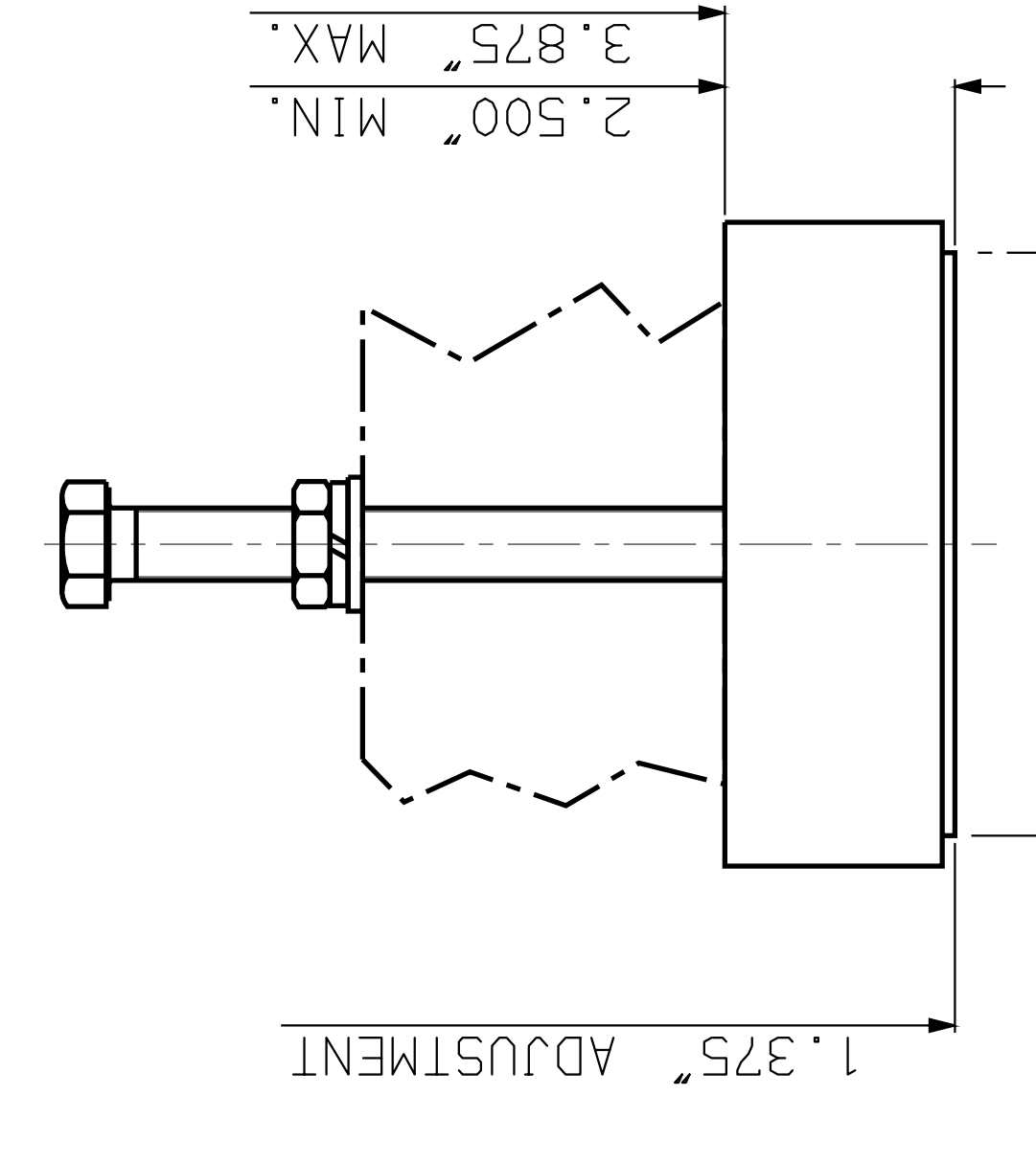
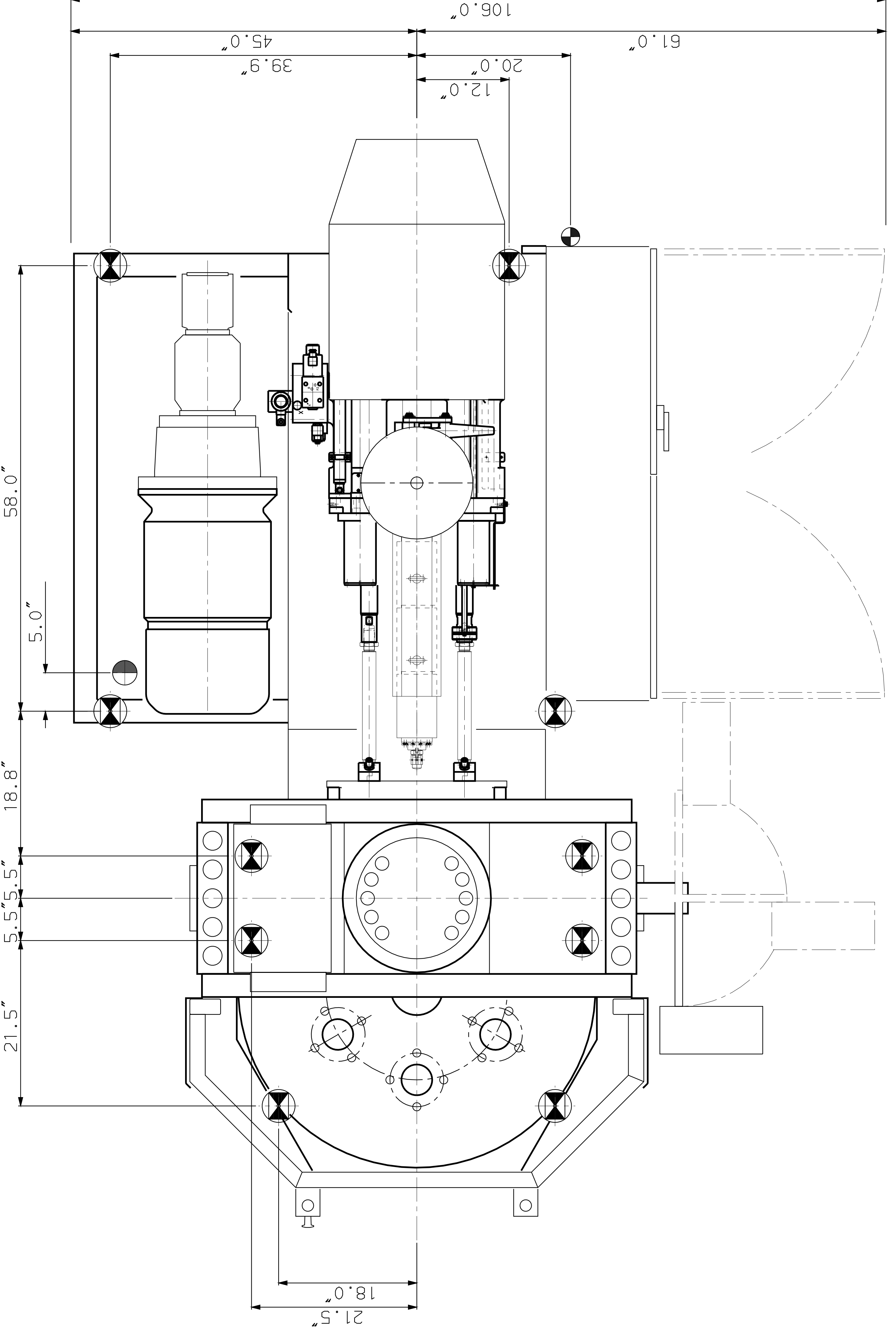
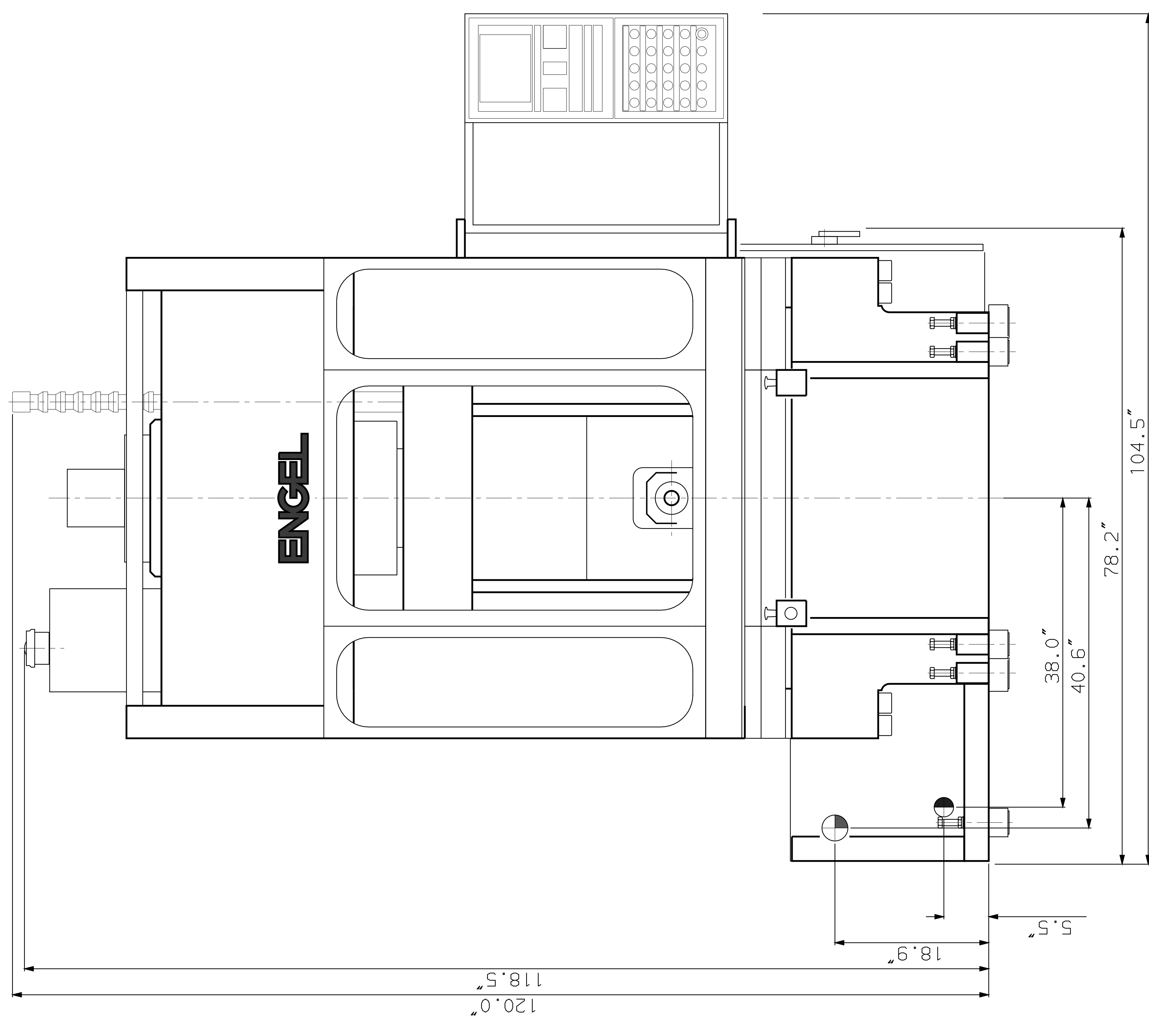
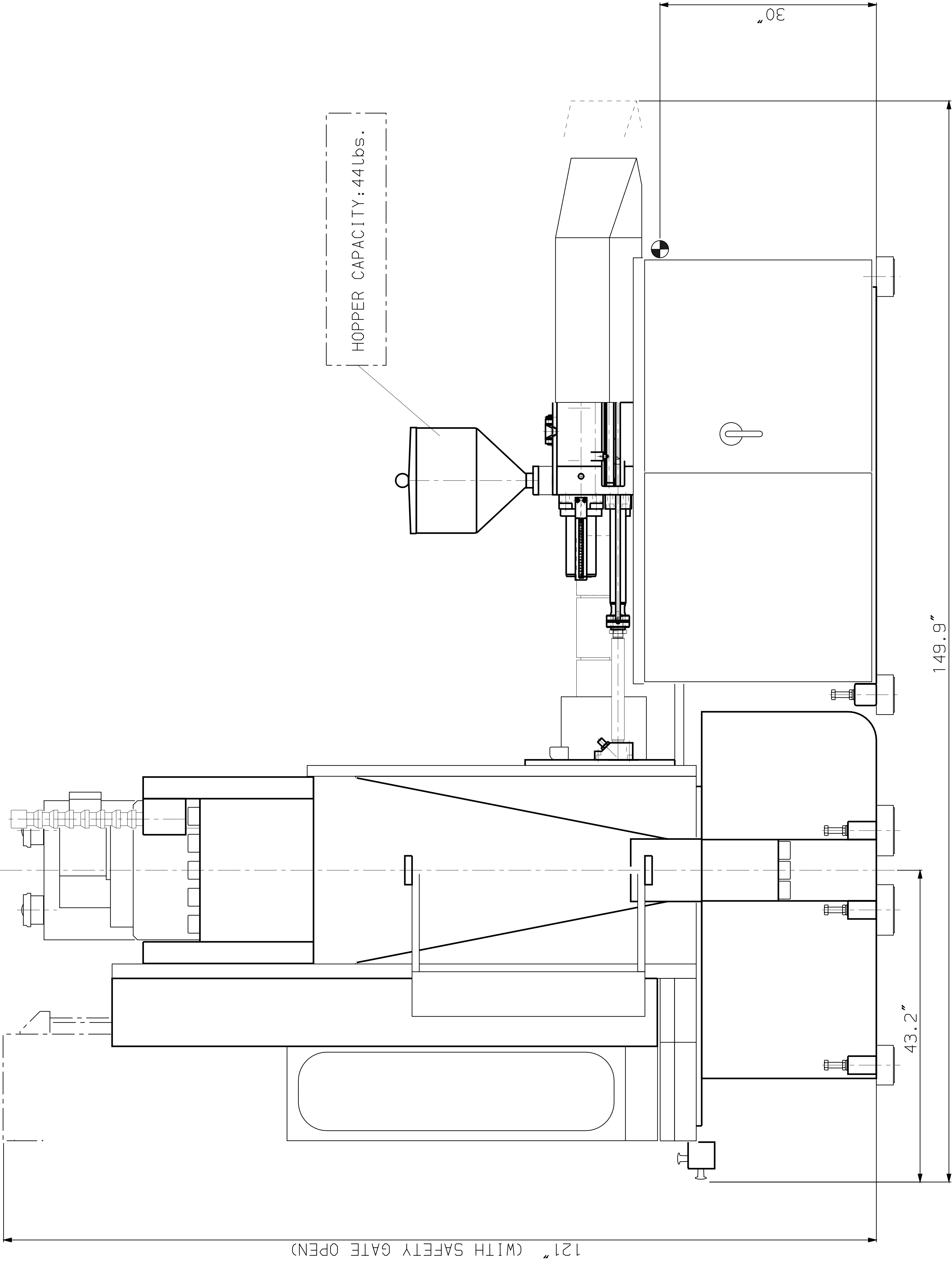
- Servo valve for closed loop injection speed, injection pressure, and screw back pressure control
- Increased hydraulic drive for increased plasticizing and injection speeds
- Accumulator system for increased injection speed or special functions
- Hot runner valve gate control (pneumatic or hydraulic)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



MACHINE MOUNT DETAIL (OPTIONAL)

TYPIC 1M51 (6 PLACES), MAXIMUM LOAD 3000 Lb.
 TYPIC 1M61 (4 PLACES), MAXIMUM LOAD 6000 Lb.
 SCALE 1:2

LEGEND

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

NOTES:

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

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 REV. # 0

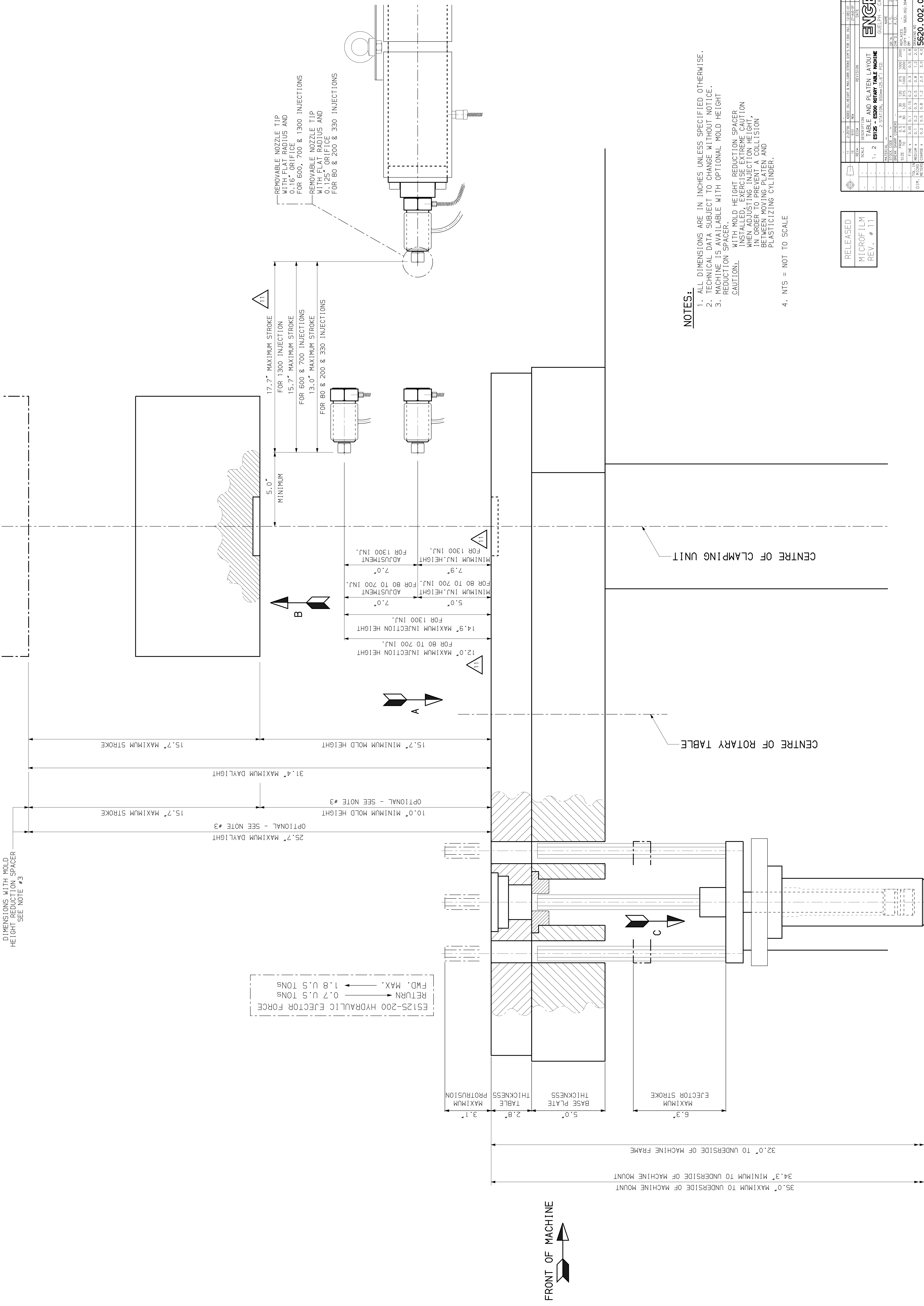
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DIMENSIONS WITH MOLD HEIGHT REDUCTION SPACER SEE NOTE #3



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

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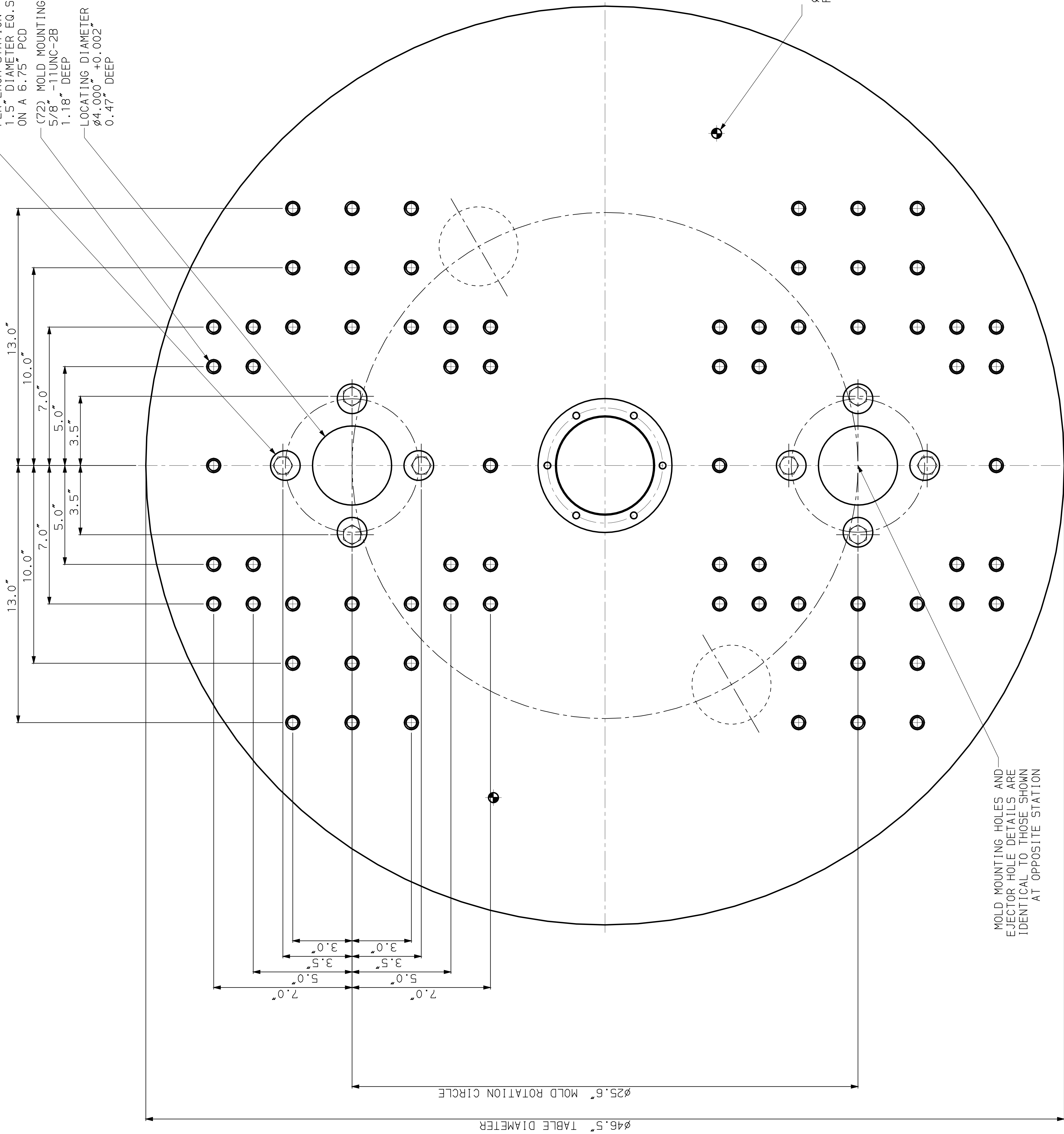
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(4) EJECTOR HOLES
PER EACH STATION
1.5" DIAMETER EQ. SPCD.
ON A 6.75" PCD.

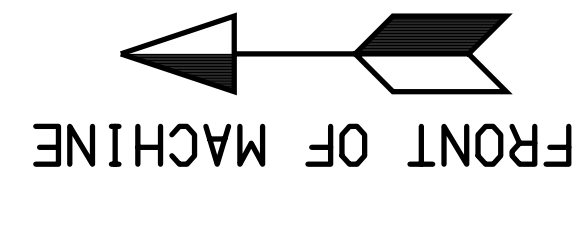
(72) MOLD MOUNTING HOLES
5/8" -11UNC-2B
1.18" DEEP

LOCATING DIAMETER
Ø4.000" +0.002

0.47" DEEP

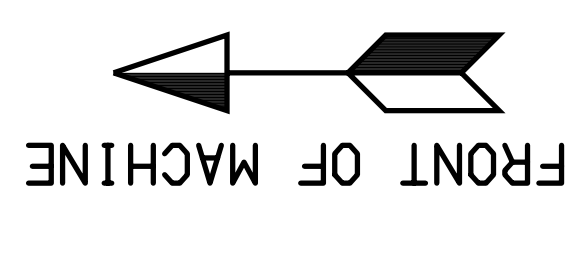
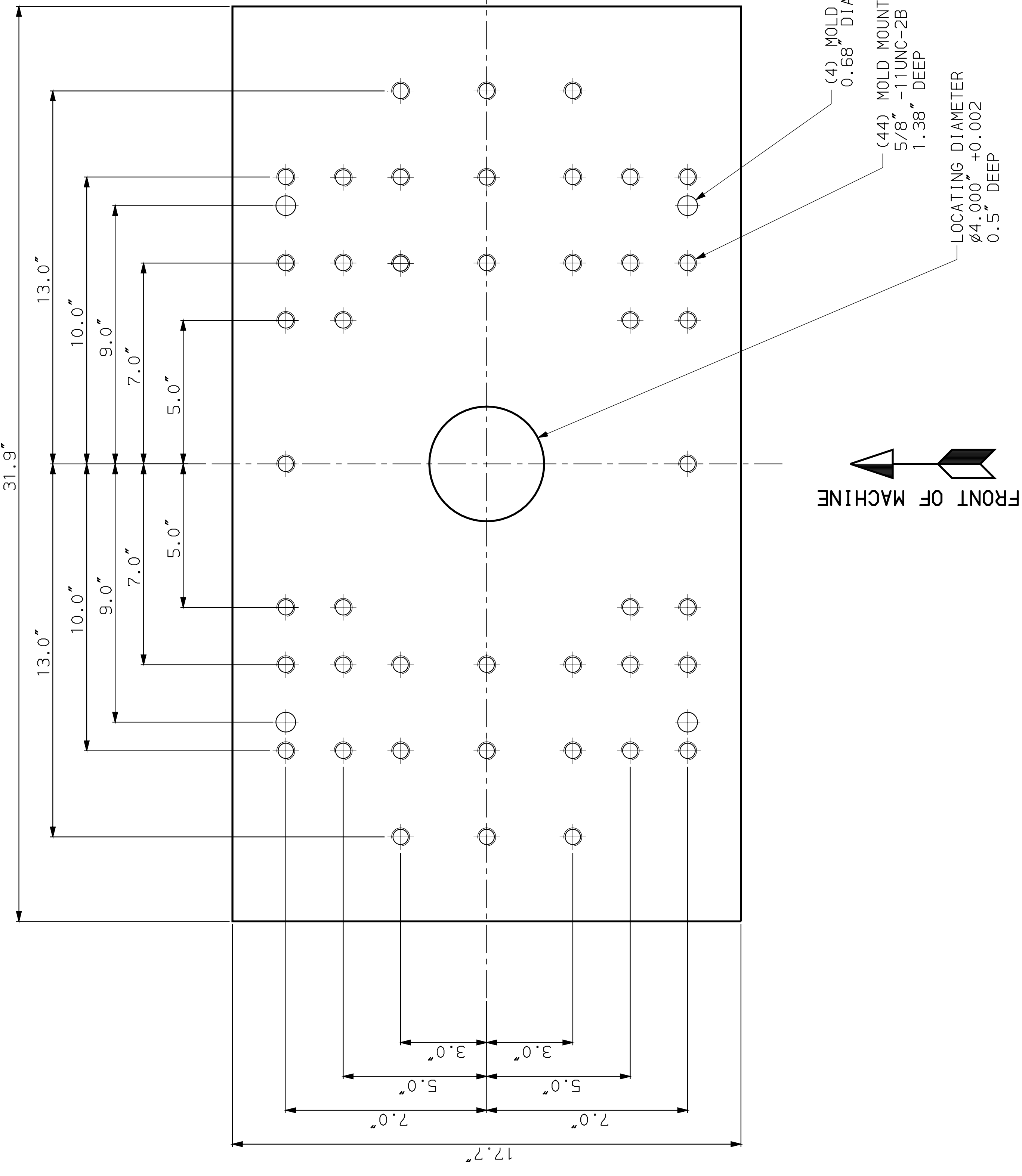


MOLD MOUNTING HOLES AND
EJECTOR HOLE DETAILS ARE
IDENTICAL TO THOSE SHOWN
AT OPPOSITE STATION



"A" VIEW

VIEW AT TOP OF TWO & THREE STATION TABLE



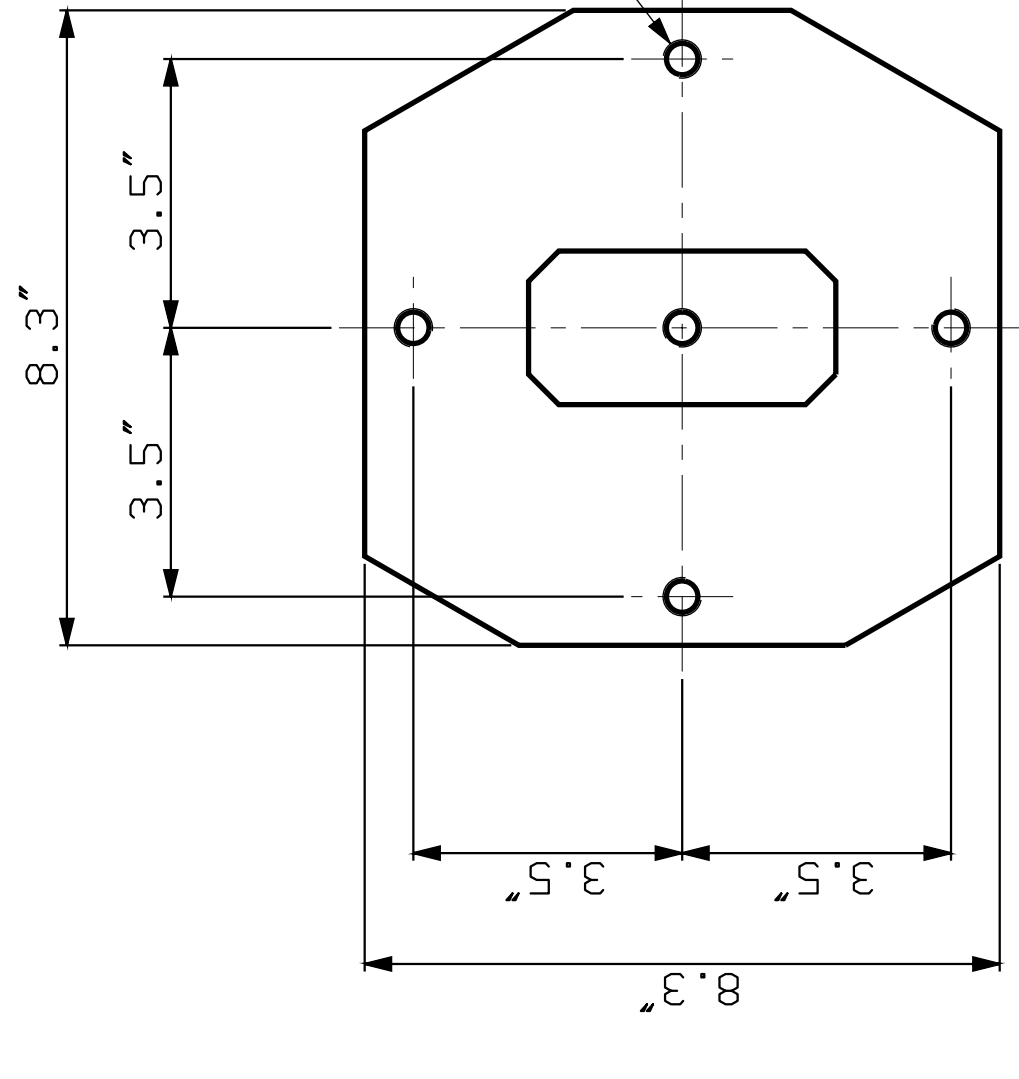
"B" VIEW

VIEW AT MOLD MOUNTING SURFACE OF MOVING PLATEN

(4) MOLD MOUNTING HOLES
0.68" DIAMETER THRU

(44) MOLD MOUNTING HOLES
5/8" -11UNC-2B
1.38" DEEP

LOCATING DIAMETER
Ø4.000" +0.002
0.5" DEEP



"C" VIEW

VIEW AT EJECTOR PLATE

(5) EJECTOR ROD HOLES
1/2" -11UNC-2B
0.67" DEEP

NOTES:

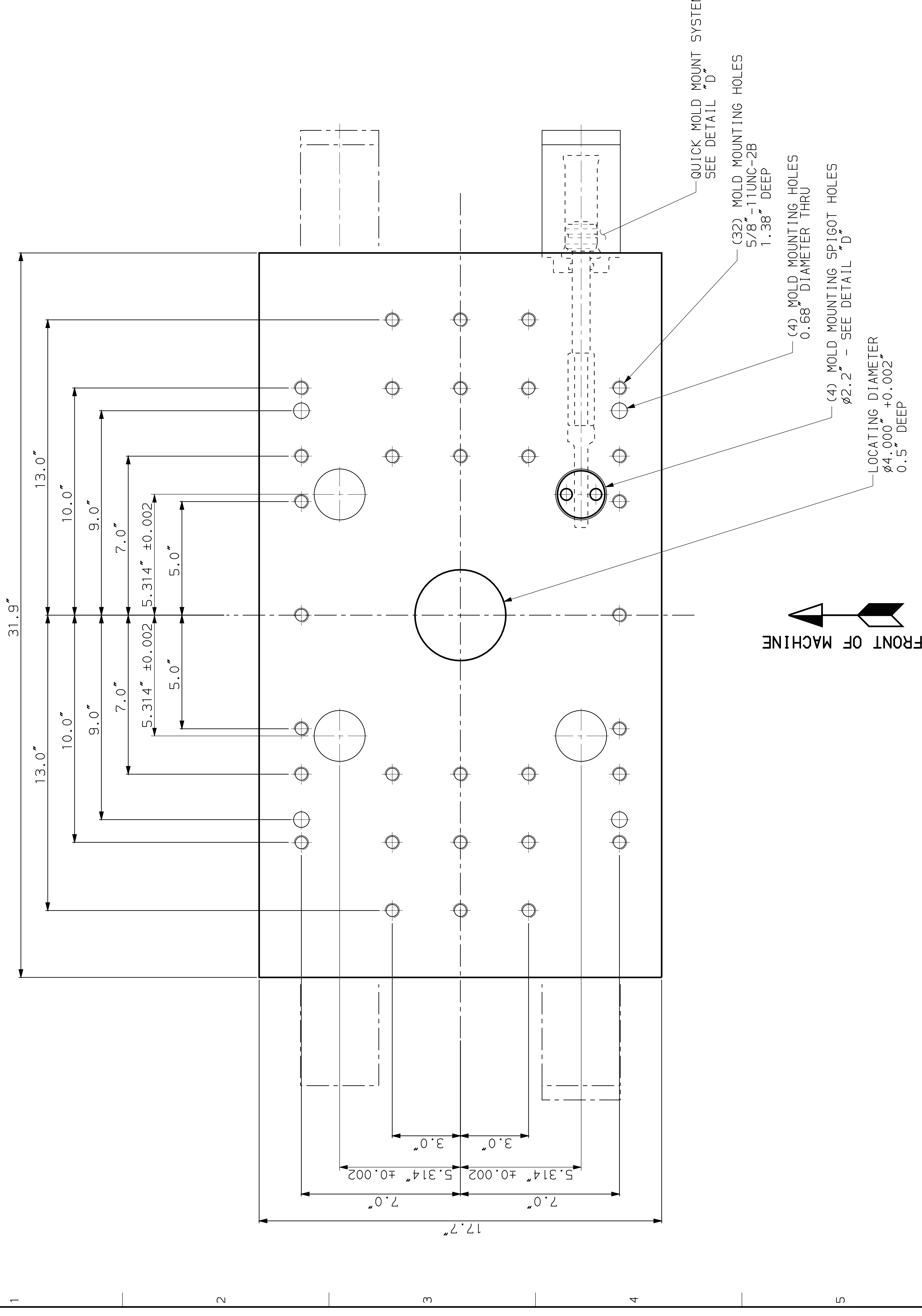
1. ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
2. TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.

RELEASED
MICROFILM
REV. # 11

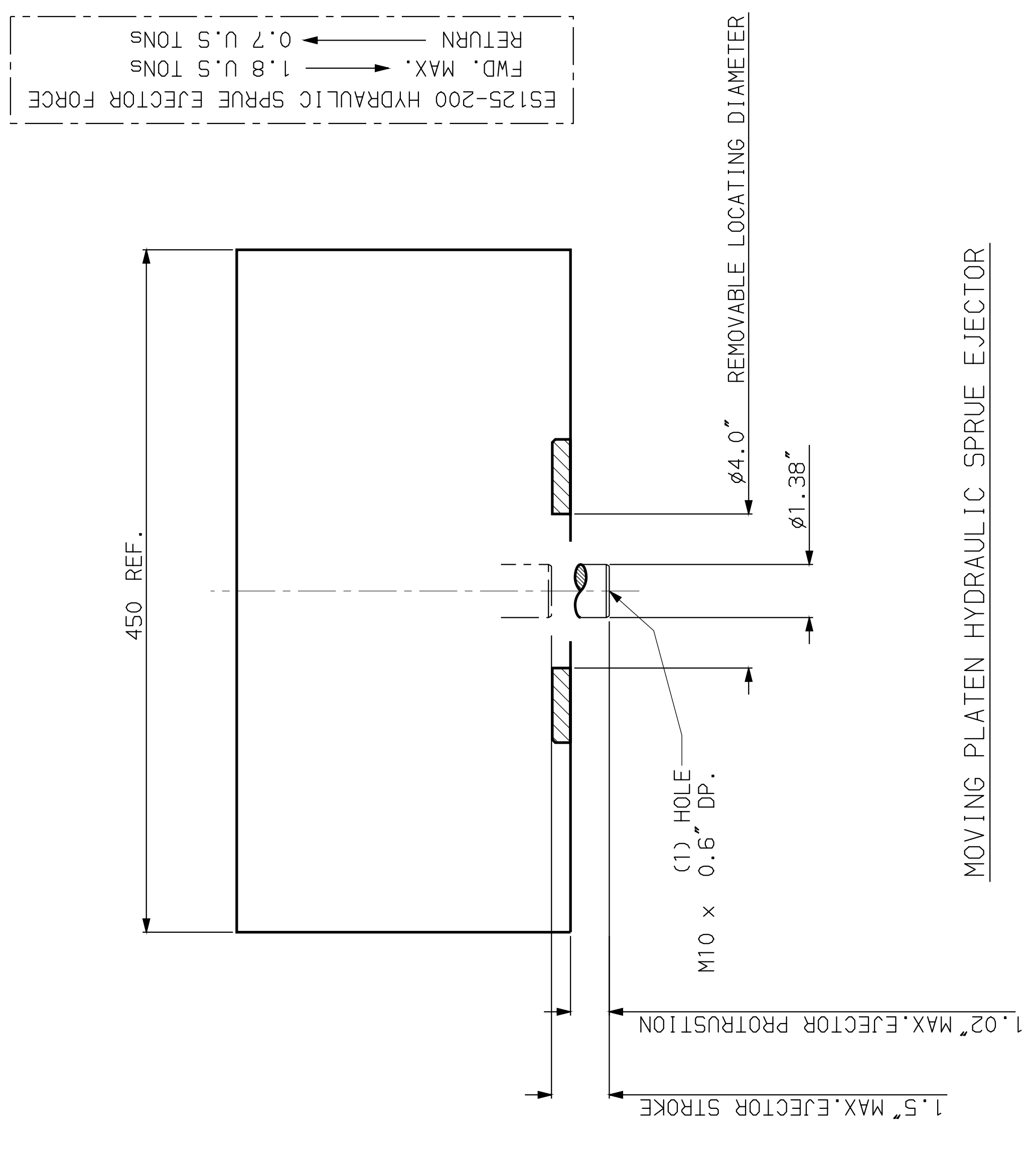
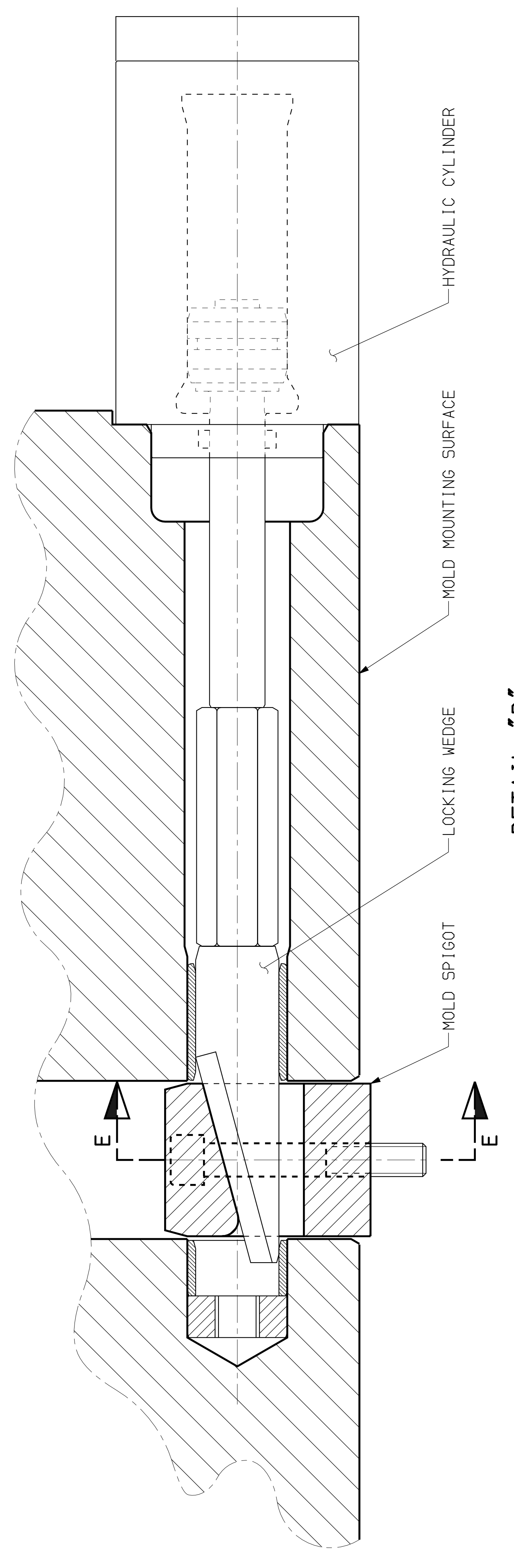
REV.	DATE	BY	CHK'D	DATE	DESCRIPTION
1	2-25-78	SEE SHEET # 8 & 4			
2	12-28-81	LUDLIP			
3					
4					
5					

SCALE	DESCRIPTION	REVISION	DATE
1:2.5	TABLE & PLATEN LAYOUT		
	FOR MACHINE		
	FOR MACHINE		

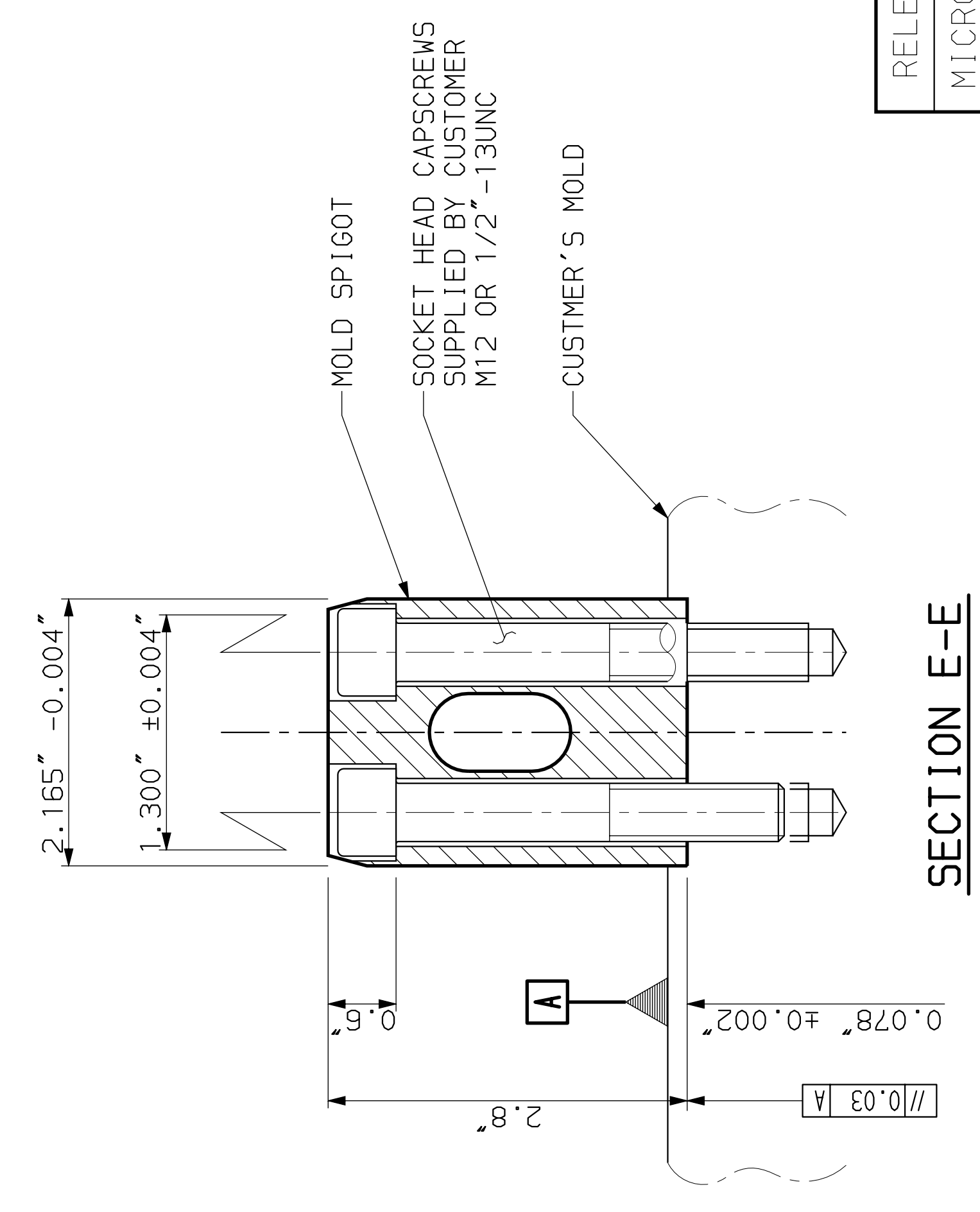
MATERIAL	QUANTITY	DATE	BY	CHK'D	DATE
BRASS	1	12-28-81	LUDLIP		
ALUMINUM	1	12-28-81	LUDLIP		
STEEL	1	12-28-81	LUDLIP		
BRASS	1	12-28-81	LUDLIP		
ALUMINUM	1	12-28-81	LUDLIP		
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BRASS	1	12-28-81	LUDLIP		
ALUMINUM	1	12-28-81	LUDLIP		
STEEL	1	12-28-81	LUDLIP		
BRASS	1				



"B" VIEW
VIEW AT MOLD MOUNTING SURFACE OF MOVING PLATEN
QUICK MOLD MOUNT SYSTEM



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



REV.	DATE	BY	CHK'D	DATE
1.0	2-25-98	W.P.		
2.0	2-25-98	W.P.		
3.0	2-25-98	W.P.		
4.0	2-25-98	W.P.		
5.0	2-25-98	W.P.		
6.0	2-25-98	W.P.		

SCALE	DESCRIPTION	REVISION
1:2.5	TABLE & PLATEN LAYOUT	
	ES125-200 HYDRAULIC SPRUE EJECTOR	
	QUICK MOLD MOUNT SYSTEM	

MATERIAL	DATE	NAME

SIZE	FROM	TO	2000	REPLACES
0.5	0.5	1.25	1000	5620.002.002
1.0	1.0	2.0	2000	
2.0	2.0	4.0	4000	
4.0	4.0	8.0	8000	
8.0	8.0	16.0	16000	
16.0	16.0	32.0	32000	
32.0	32.0	64.0	64000	
64.0	64.0	128.0	128000	
128.0	128.0	256.0	256000	
256.0	256.0	512.0	512000	
512.0	512.0	1024.0	1024000	
1024.0	1024.0	2048.0	2048000	
2048.0	2048.0	4096.0	4096000	
4096.0	4096.0	8192.0	8192000	
8192.0	8192.0	16384.0	16384000	
16384.0	16384.0	32768.0	32768000	
32768.0	32768.0	65536.0	65536000	
65536.0	65536.0	131072.0	131072000	
131072.0	131072.0	262144.0	262144000	
262144.0	262144.0	524288.0	524288000	
524288.0	524288.0	1048576.0	1048576000	
1048576.0	1048576.0	2097152.0	2097152000	
2097152.0	2097152.0	4194304.0	4194304000	
4194304.0	4194304.0	8388608.0	8388608000	
8388608.0	8388608.0	16777216.0	16777216000	
16777216.0	16777216.0	33554432.0	33554432000	
33554432.0	33554432.0	67108864.0	67108864000	
67108864.0	67108864.0	134217728.0	134217728000	
134217728.0	134217728.0	268435456.0	268435456000	
268435456.0	268435456.0	536870912.0	536870912000	
536870912.0	536870912.0	1073741824.0	1073741824000	
1073741824.0	1073741824.0	2147483648.0	2147483648000	
2147483648.0	2147483648.0	4294967296.0	4294967296000	
4294967296.0	4294967296.0	8589934592.0	8589934592000	
8589934592.0	8589934592.0	17179869184.0	17179869184000	
17179869184.0	17179869184.0	34359738368.0	34359738368000	
34359738368.0	34359738368.0	68719476736.0	68719476736000	
68719476736.0	68719476736.0	137438953472.0	137438953472000	
137438953472.0	137438953472.0	274877906944.0	274877906944000	
274877906944.0	274877906944.0	549755813888.0	549755813888000	
549755813888.0	549755813888.0	1099511627776.0	1099511627776000	
1099511627776.0	1099511627776.0	2199023255552.0	2199023255552000	
2199023255552.0	2199023255552.0	4398046511104.0	4398046511104000	
4398046511104.0	4398046511104.0	8796093022208.0	8796093022208000	
8796093022208.0	8796093022208.0	17592186044416.0	17592186044416000	
17592186044416.0	17592186044416.0	35184372088832.0	35184372088832000	
35184372088832.0	35184372088832.0	70368744177664.0	70368744177664000	
70368744177664.0	70368744177664.0	140737488355328.0	140737488355328000	
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281474976710656.0	281474976710656.0	562949953421312.0	562949953421312000	
562949953421312.0	562949953421312.0	1125899906842624.0	1125899906842624000	
1125899906842624.0	1125899906842624.0	2251799813685248.0	2251799813685248000	
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4503599627370496.0	4503599627370496.0	9007199254740992.0	9007199254740992000	
9007199254740992.0	9007199254740992.0	18014398509481984.0	18014398509481984000	
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147573952589676412928.0	147573952589676412928.0	295147905179352825856.0	295147905179352825856000	
295147905179352825856.0	295147905179352825856.0	590295810358705651712.0	590295810358705651712000	
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2361183241434822606848.0	2361183241434822606848.0	4722366482869645213696.0	4722366482869645213696000	
4722366482869645213696.0	4722366482869645213696.0	9444732965739290427392.0	9444732965739290427392000	
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37778931862957161709568.0	37778931862957161709568.0	75557863725914323419136.0	75557863725914323419136000	
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967140655691703339764928.0	967140655691703339764928.0	1934281311383406679529856.0	1934281311383406679529856000	
1934281311383406679529856.0	1934281311383406679529856.0	3868562622766813359059712.0	3868562622766813359059712000	
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