

Engel Injection Molding Machine

ES 300
TOGGLE
Data Sheet

TECHNICAL SPECIFICATIONS - ES 300 TOGGLE INJECTION MOLDING MACHINE

CLAMP

Clamp force	US tons	300
Clamp opening force	US tons	42
Clamp stroke (max.)	inches	23.62
Mold height (min - max)	inches	7.87 - 25.98
Daylight (min - max)	inches	7.87 - 49.60
Platen size (HxV)	inches	35.67 x 35.87
Distance between tie bars (HxV)	inches	25.04 x 25.04
Tie bar diameter	inches	3.94
Hydraulic ejector stroke	inches	7.87
Hydraulic ejector force	tons	8.9

INJECTION

		1350	1350	1800
Screw diameter	mm	55	60	70
Screw diameter	inches	2.165	2.362	2.756
Shot size ¹⁺²	oz	20.0	23.8	33.7
Injection capacity	in ³	37.7	44.9	63.4
Recovery rate ¹⁺²	oz/sec	1.4	1.8	2.7
Plasticizing capacity ¹⁺²	lbs/hr	318	402	603
Injection rate at max. press. ³	in ³ /sec	13.9	16.6	18.8
Injection rate (regenerative) ³	in ³ /sec	17.3	20.6	22.6
Injection velocity at max. press. ³	in/sec	3.8	3.8	3.1
Injection velocity (regenerative) ³	in/sec	4.7	4.7	3.8
Screw stroke	inches	10.24	10.24	10.63
Injection pressure (max.)	psi	28304	26535	22780
Injection pressure (regenerative)	psi	22850	21421	18934
Screw speed range (min=25)	rpm	217		
Screw torque ⁴	ft-lbs	1305		
Screw L/D ratio		20:1		
Nozzle stroke	inches	19.69		
Nozzle force	US tons	12.4		

HYDRAULICS

Pump capacity (required)	gpm	46.0
Oil reservoir capacity	US gal	145

ELECTRICS

Power supply available	volts	208 / 230 / 460 / 575 - 3PH / 60Hz
Total rated horsepower	HP	50
Number of heat control zones		4+Nozzle
Total heating wattage	kw	20.2 21.7 24.7

GENERAL

Dry cycle performance ⁵	sec	2.0
Water requirements (max)	gpm	12
Machine dimensions (LxWxH)	inches	283 x 73 x 93
Machine weight	lbs	19000/9000 ⁶
Hopper capacity	lbs	163
Suitable Engel robots		ERC 43 - 63

NOTES:

1. Based on polystyrene material.
2. Calculated
3. Can be increased with accumulator.
4. Can be increased.
5. Per Euromap 6 standard.
6. Split base - two piece shipping

(N/A=Not Available)

All data subject to change without notice
Per Rev. 22, 010807

ENGEL

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
- Precision linear bearings for carriage movement
- Hopper discharge chute
- Feedthroat prepared for water-cooling
- Feedthroat with thermometer
- Increased wattage ceramic heater bands
- Quick disconnects for heater bands
- Increased injection speed (regenerative circuit, screen selectable)
- Programs for sprue break, decompression, and intrusion

Clamp

- SPI mold mounting and ejector pattern
- Multi-stroke hydraulic ejection, speed and pressure controlled
- Heavy tie bars, large bearing surface support for moving platen
- Split base design
- Center ejector rod
- Mechanical safety dropbar
- 3 speed opening and closing
- Hydraulic, electric and electronic safety gate interlocks
- Automatic mold protection: self learning mold protection for optimum cycle time and set-up efficiency on CC100 models. (optional with EC100)
- Smooth, fast acting 5-point double toggle
- Adjustable support under moving platen
- Automatic central lubrication with pressure system protection
- Stationary platen prepared for water cooling
- 5 speed/pressure/position mold protection on EC100 models

Hydraulics

- Closed loop injection speed, injection pressure and screw back pressure; via single 'smart' pump technology on EC100 controlled models; (via double 'smart' pump technology on CC100 controlled models)
- Independent ejector/core motion/carriage movement on CC100 controlled models (corepull hardware optional)
- Fully proportional linearized hydraulic system
- Automatic calibration of proportional hydraulic valves and transducers
- Closed loop oil temperature regulation with prewarming system
- Clogged filter indicator

Hydraulics (cont'd)

- Oil level indicator with level switch
- Pressure selector gauge
- Proportional clamp valve for accurate clamp positioning

Controls, Electrics & Electronics

- Microprocessor control with high resolution flat color screen
 - Micrograph plus for CC100 control (optional with EC100)
 - RISC Multiple processor architecture (distributed intelligence)
 - Built-in disk drive for data up/down loading. Mold set-ups stored via machine CPU.
 - Quick machine set-up via single screen
 - Help text system
 - Linear transducers for measurement of the clamp, injection, carriage & ejector positions
 - Networking capability via "Teleservice/Engel Monitoring System" ethernet connection on CC100 models. (optional on EC100 models)
 - Automatic cycle monitoring and analysis
 - Digital display of all actual values
 - Current function display
 - Self-diagnostics, monitoring, alarm & calibration
 - Automatic screen shut-off
 - Automatic balancing of heat zones during warm-up
 - Auto barrel stand-by temperature when machine in alarm condition
 - Automatic reject selection
 - Additional screen selectable languages (Spanish/French) (other languages available upon request)
 - US/metric units conversion (A03 controls only)
 - User-defined programmable text pages. Keyboard optional.
 - Self-tuning temperature controls
 - History reporting of alarm conditions and set-up changes
 - Resettable cycle and non-resettable hour counters
 - Ventilated, filtered control panel
 - Energy-efficient, totally enclosed fan cooled motor
- General**
- Easy access to motors, pumps & hydraulics
 - Large, open drop area for automation
 - Ergonomic design for operator ease and safety
 - Optically isolated control system (protection from outside noise)
 - Analog/digital conversion to minimize signal noise on linear position transducers.
 - Manufactured to ANSI/SPI B151.1 safety regulations

OPTIONAL EQUIPMENT**Injection Unit**

- Hardened screws and bi-metallic barrels
- Specialty screws and screw tips for a wide variety of applications
- LIM, Thermoset, PVC, PIM, Gas-inj., MuCell and other packages
- Smaller than standard injection units
- Increased wattage & air-cooled heaterbands
- Shut-off nozzles

Injection (cont'd)

- Electric screw drive for increased energy efficiency
- Insulating blanket for barrel
- Hopper or drawer magnets

Clamp

- Platen prepared for water cooling
- Mold locating ring on the moving platen
- Mold venting program
- Quick mold mounting systems (hydraulic or magnetic)
- Semi- or fully auto. mold change system
- Air blow-off valve
- Mold support assembly
- SPI safety key switch for clamp, ejector and core movement
- Extended tie bars
- Automatic clamp force control (std. with CC100)

Hydraulics

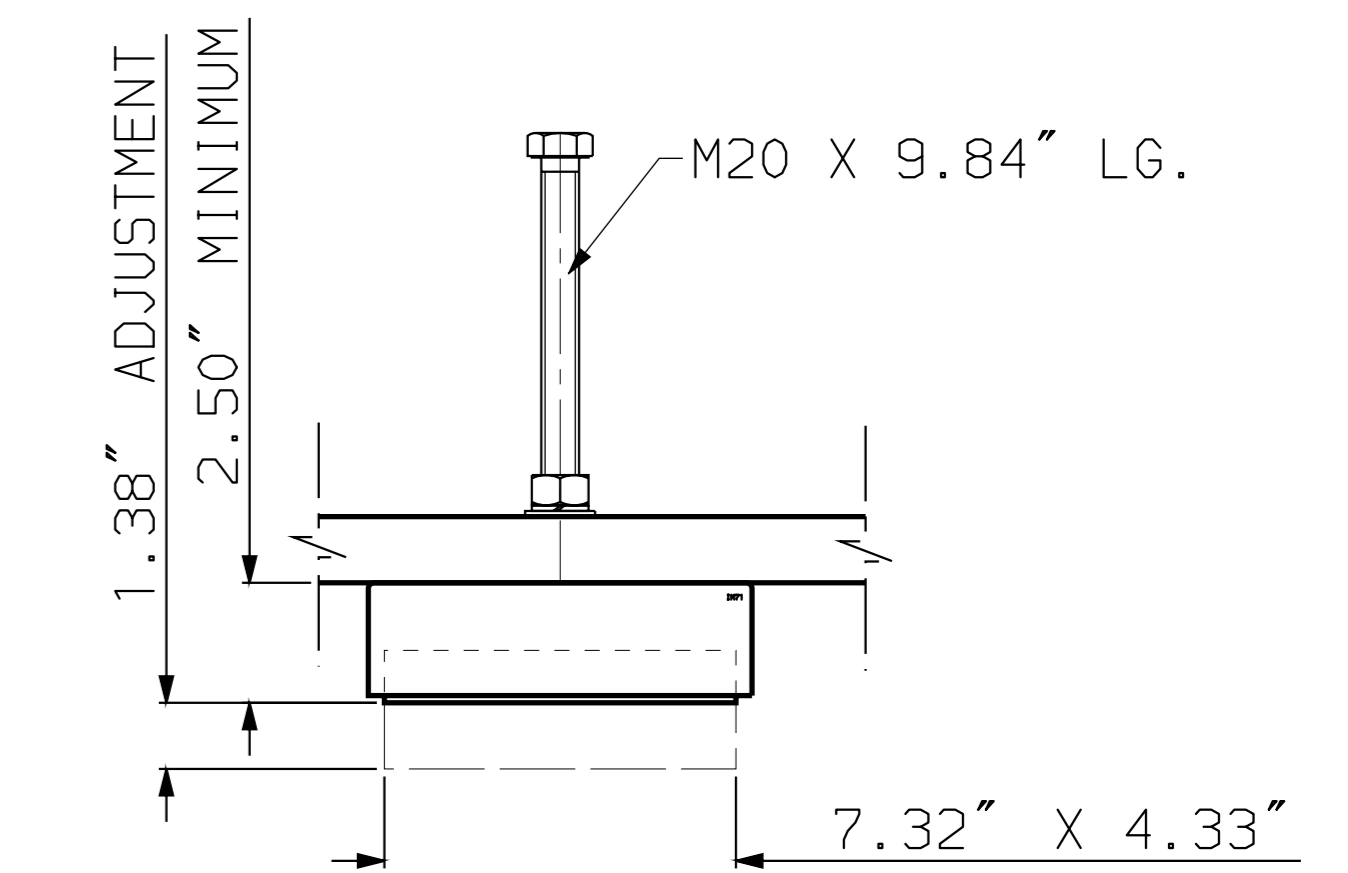
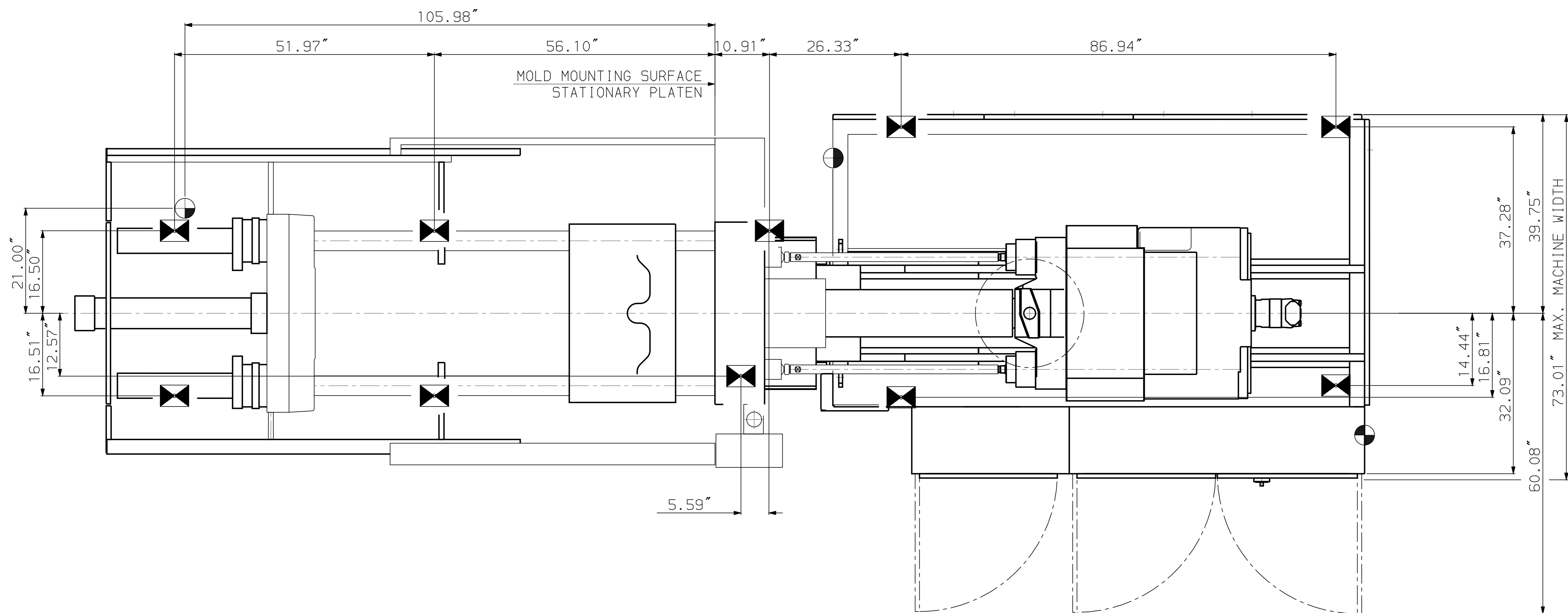
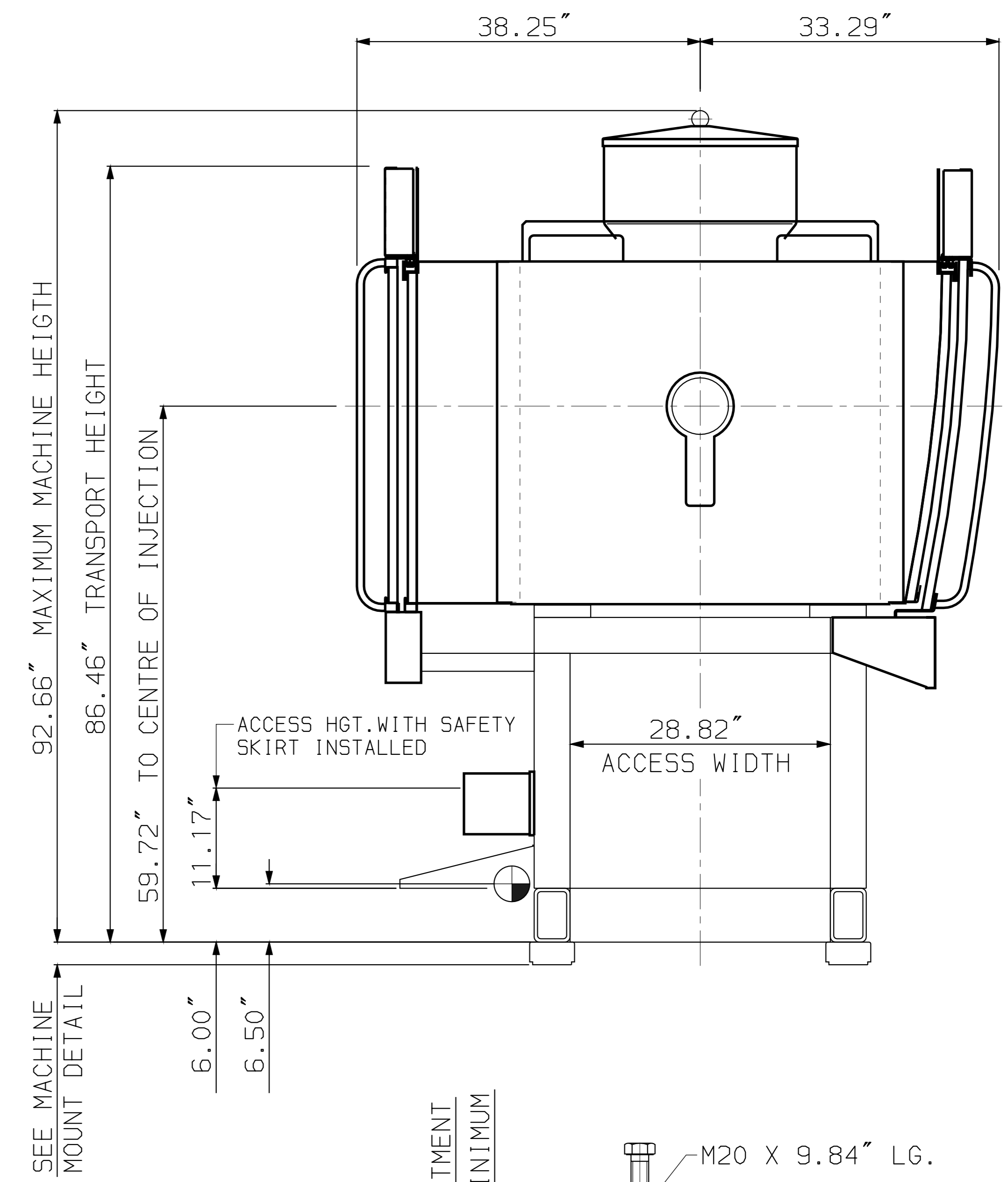
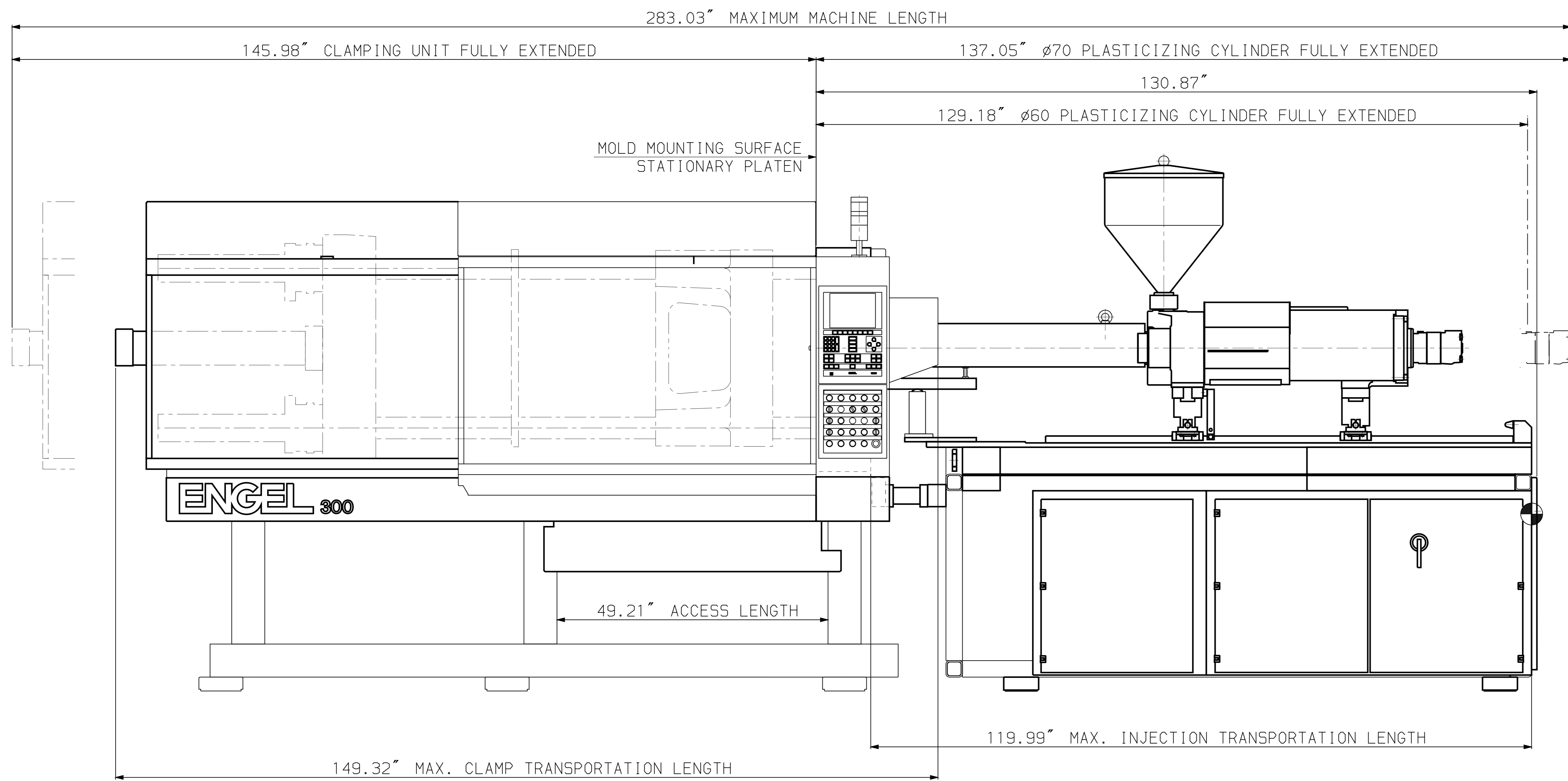
- Increased hydraulic drive for increased plasticizing and injection speeds
- Corepull(s) and unscrewing
- Hot runner valve gate control (pneumatic or hydraulic)
- Independent plasticizing
- High torque screw drive
- By-pass oil filtration
- Accumulator for increased inj. speed

Controls, Electrics & Electronics

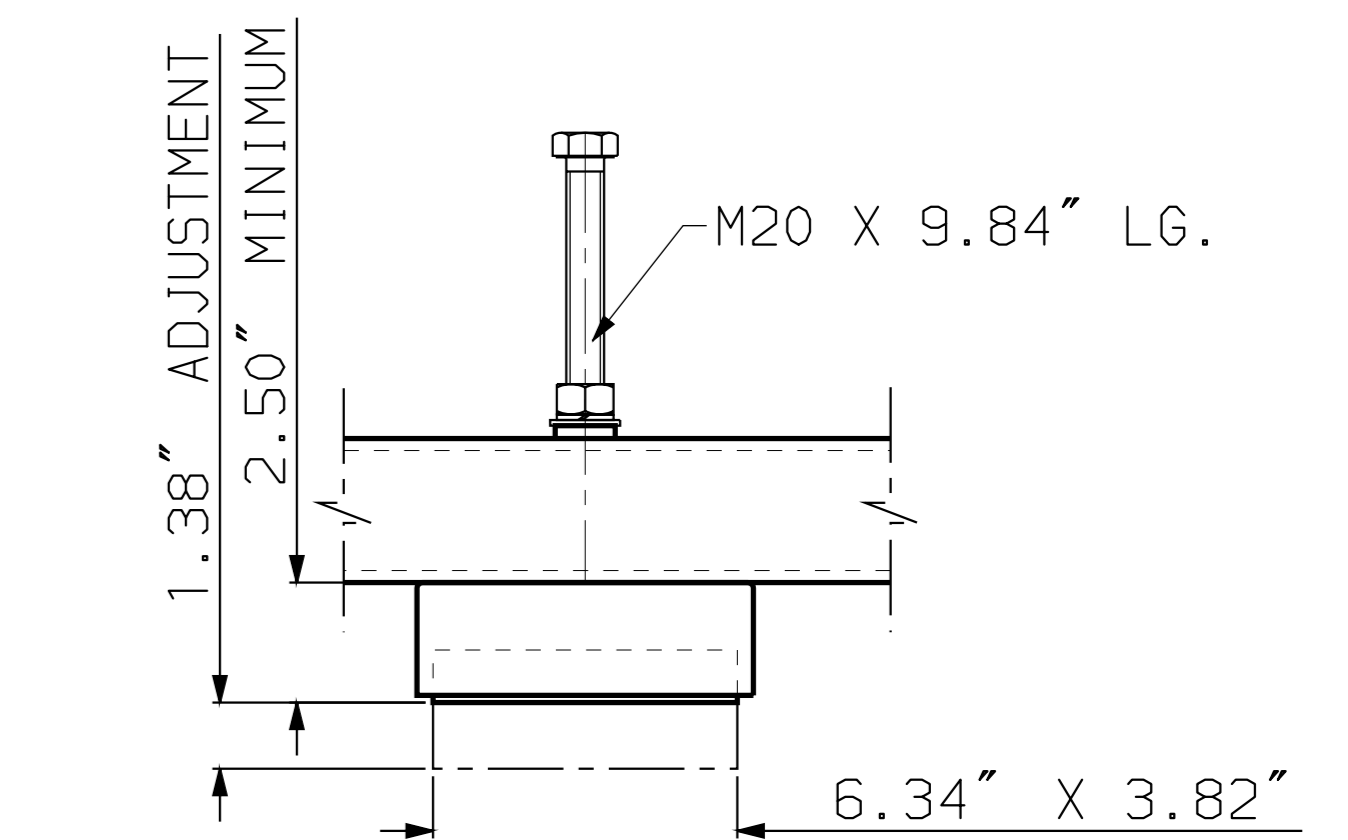
- CC100 microprocessor control with high resolution flat color screen.
- Microplast and Microflow software pkgs.
- Micrograph for EC100 Control (standard with CC100 Control)
- Process data graphics and reports
- Magnetic security card access
- SPC (Quality Data Statistics)
- Auto. barrel/nozzle heat-up (7 day, 24 hour time)
- Power factor capacitors
- Robot interface
- Auxiliary electrical outlets
- Host computer & SPI auxiliary device interface
- Automatic shutdown for "lights out" operation (ghost shift program)
- Hot runner PID temperature controls
- Melt temperature monitor
- Melt pressure monitor
- Closed loop feedthroat cooling
- Cavity pressure dependent boost cut-off (Kistler/RJG/Dynisco)
- Graphics printer
- Power supply available: 208 / 230 / 460 / 575 volts, 3Ph / 60Hz
- Ammeters for barrel and nozzle zones

General Options

- Machine levelling/vibration mounts
- Water manifolds and flow controls
- Special painting of machine to customer specs
- Multi-injection
- Alarm bell in addition to alarm light
- Air and water service routing
- Spare parts packages
- Engel robots
- Training programs
- Engel monitoring system



CLAMP BASE MACHINE MOUNT DETAIL
LOAD CAPACITY 9000 LBS. SCALE 1:4



INJECTION BASE MACHINE MOUNT DETAIL
LOAD CAPACITY 6000 LBS. SCALE 1:4

NOTES:

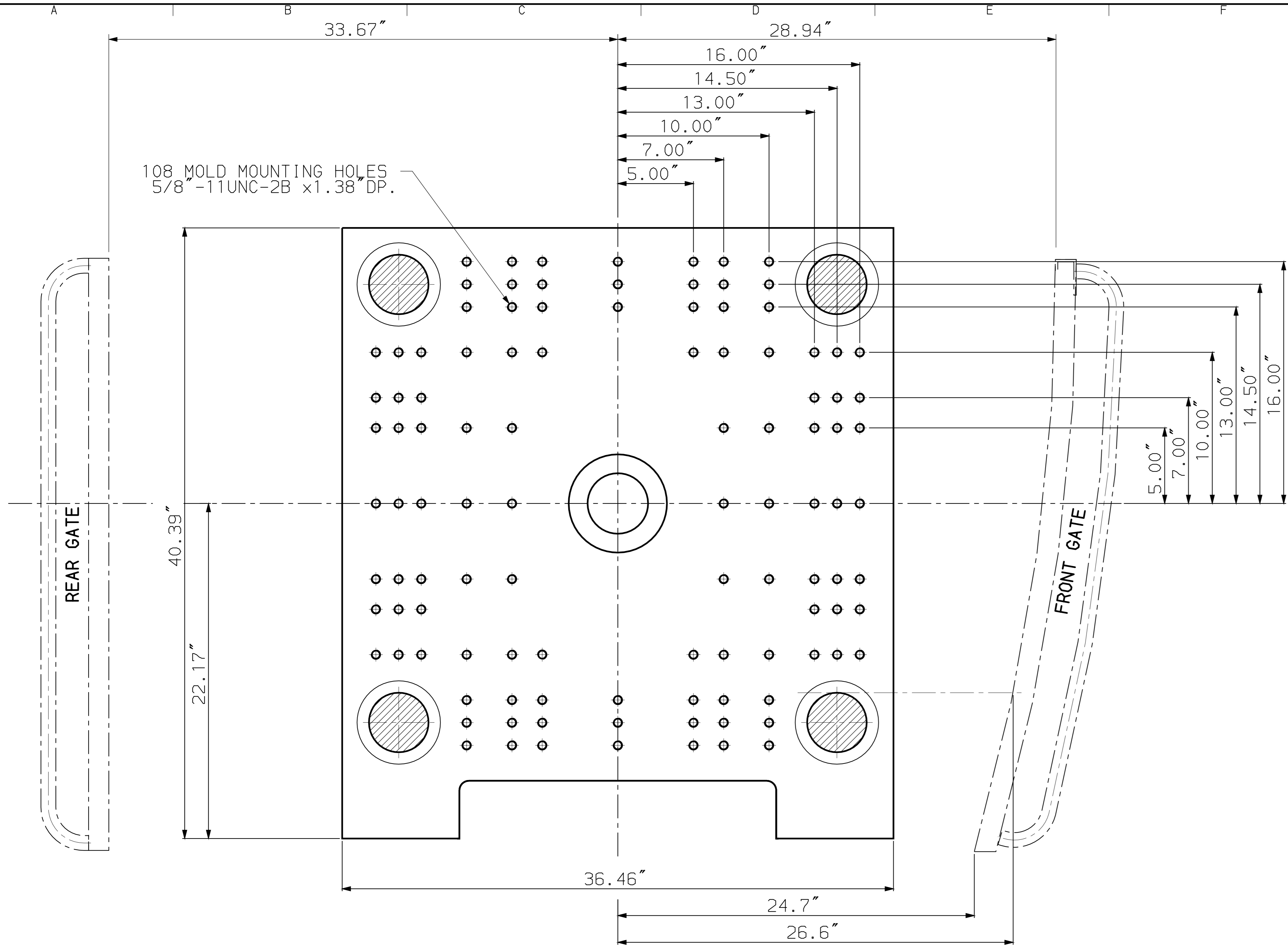
1. ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
2. TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE

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

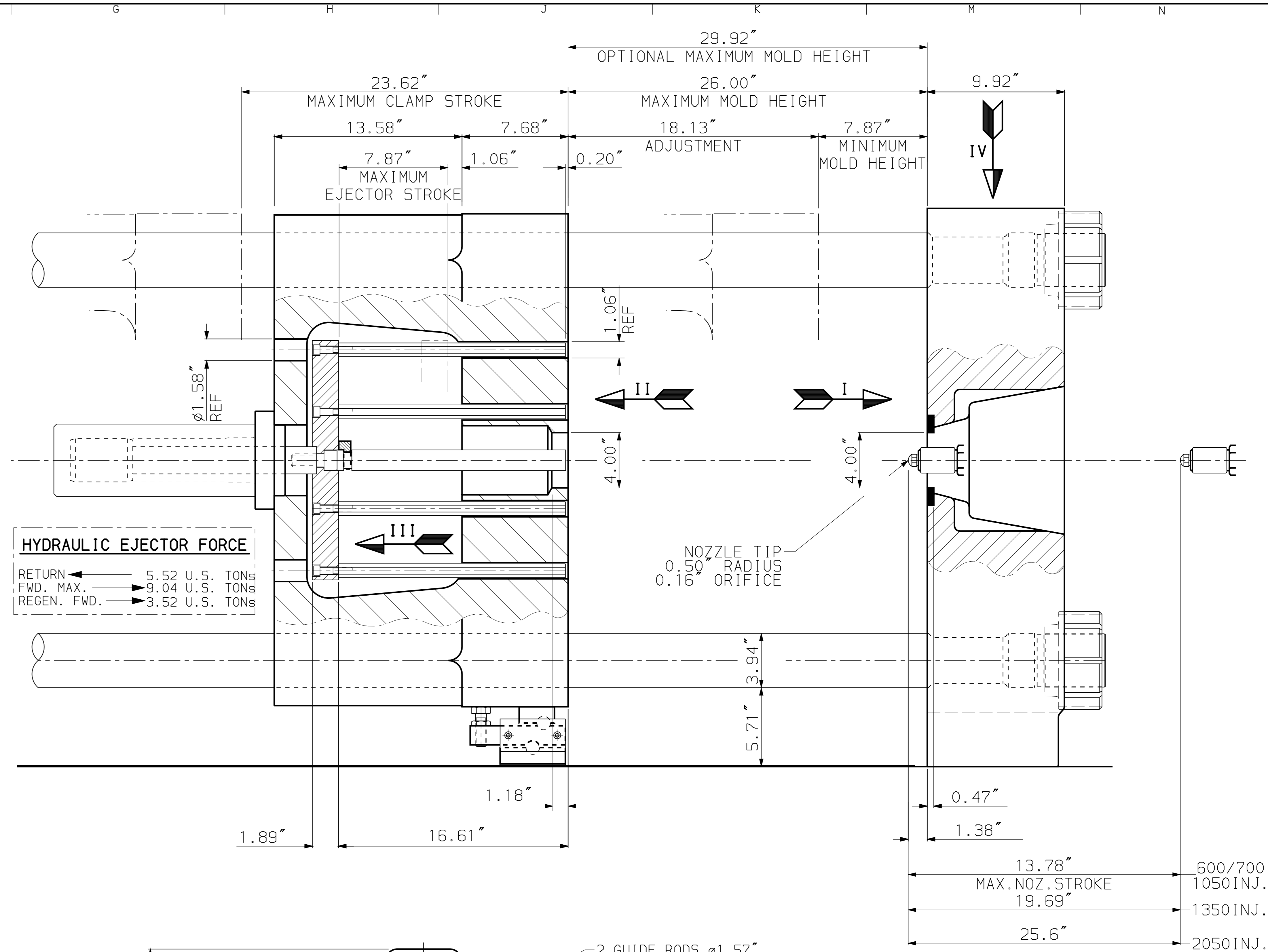
RELEASED
MICROFILM
REV. # 0

PART WEIGHT IN Kg.

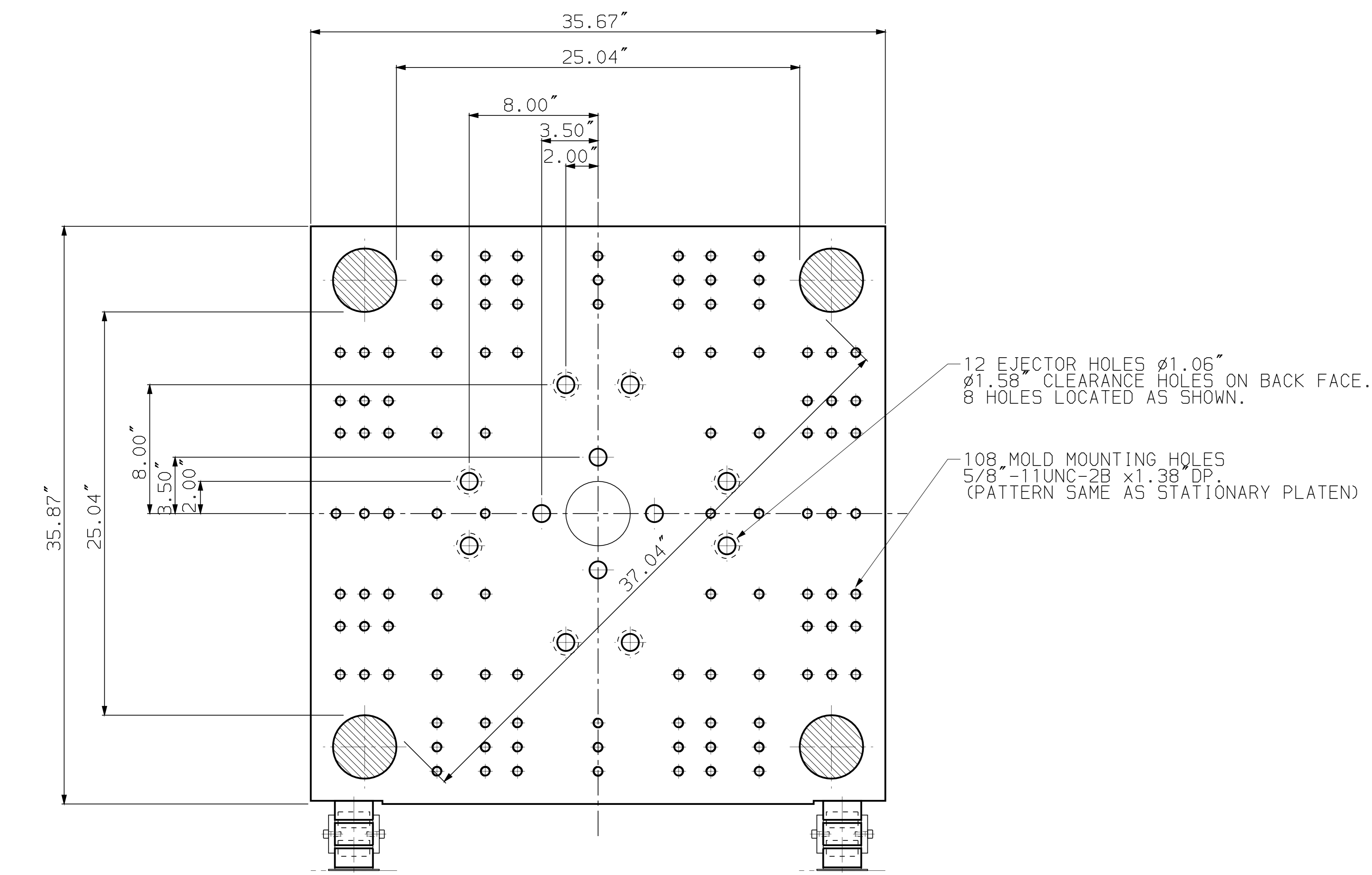
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SCALE	1:10	DESCRIPTION	MAIN DIMENSIONS	DATE	29-JUL-00	DRAWN BY	J.S.	
MATERIAL	ES300TG-1350IJ	DESCRIPTION	SPLIT BASE	DATE	29-JUL-00	CHECKED BY	J.S.	
STOCK CODE		DESCRIPTION		DATE	29-JUL-00	REPLACES		
BREAK SHARP CORNERS		DESCRIPTION		DATE	29-JUL-00	COPY FROM		
SIZE	FROM 0.5	TO 6	30	315	1000	2000		
FINE #	0.05	0.1	0.15	0.2	0.3	0.5	0.8	
MEDIUM #	0.1	0.2	0.3	0.5	0.8	1.2	2.0	
COARSE #	0.2	0.5	0.8	1.2	2.0	3.0	4.0	
DIM. MICR.								
METERS								
THIS DRAWING AND THE INFORMATION HEREIN IS CONFIDENTIAL AND MUST NOT BE REPRODUCED OR USED IN ANY WAY WITHOUT WRITTEN PERMISSION OF ENGEL CANADA INC.							9783.005.9530E	
							SHEET 2 OF 2	
							REV. # 0	



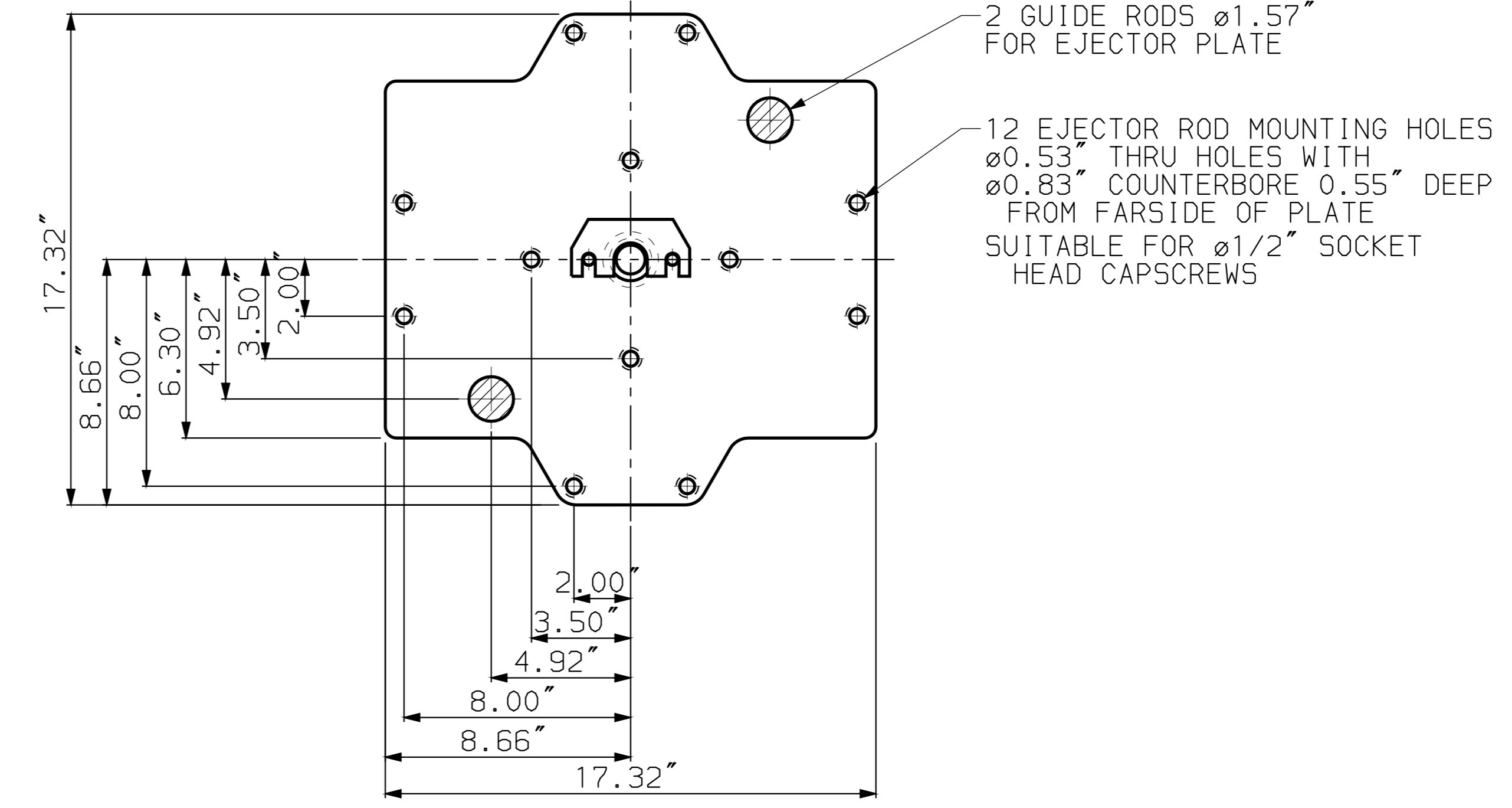
VIEW I
STATIONARY PLATEN



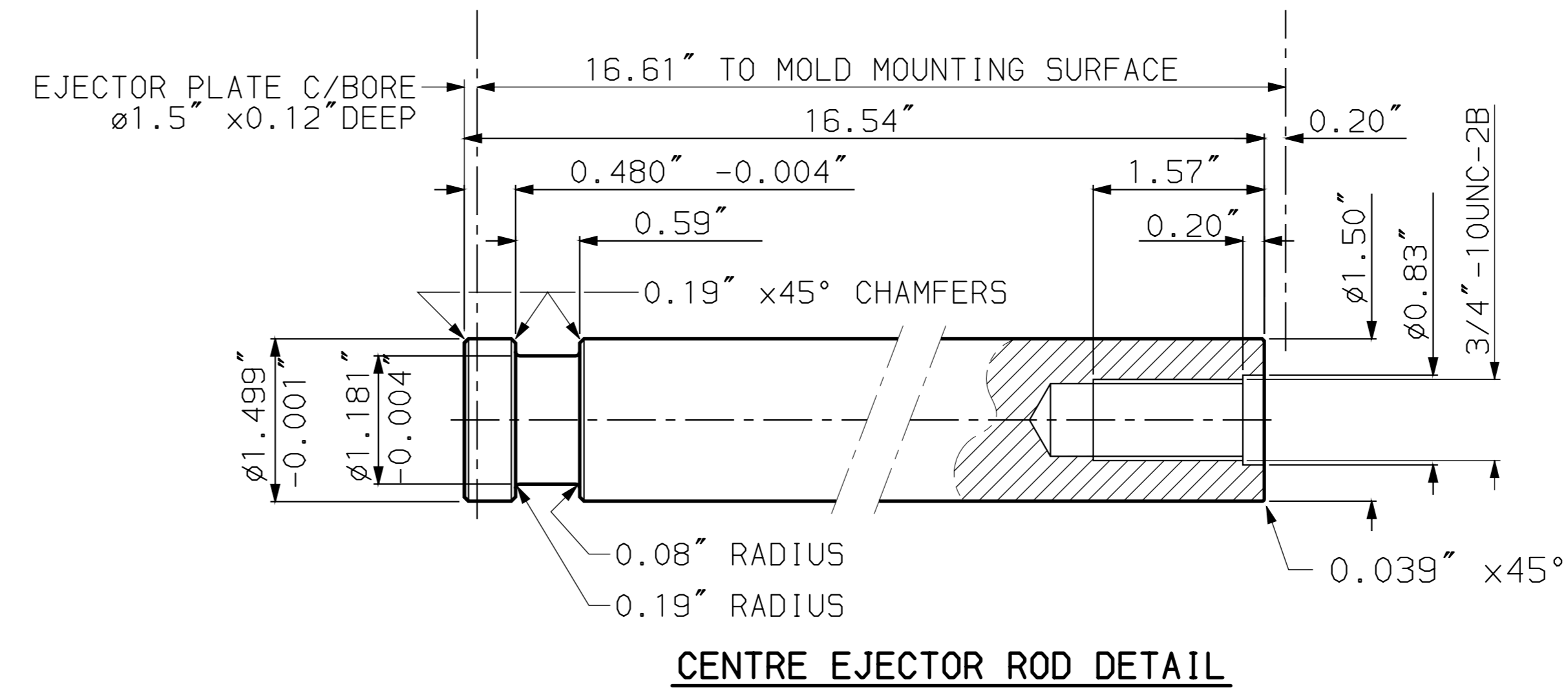
VIEW IV
TOP OF STATIONARY PLATEN



VIEW II
MOVING PLATEN



VIEW III
EJECTOR PLATE



CENTRE EJECTOR ROD DETAIL

NOTE:
 1. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
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RELEASED
 MICROFILM
 REV. # 0

REV#	DATE	BY	CHK'D	REVISION	DATE	R.H.	NAME
0	3-14-19	NEW			11-DEC-80		

SCALE	DESCRIPTION	NAME	DATE
1: 4	PLATEN LAYOUT ES300 TWIN INJ. IMPERIAL MEASUREMENT	GUELPH - CANADA	11-DEC-80

MATERIAL	DR. NO.	NAME	DATE
STOCK CODE #	EQM	B.H.	11-DEC-80

DIM.	TOL. IN	MICRO	COARSE #	0.2	0.5	0.8	1.2	2.0	3.0	4.0
				0.2	0.5	0.8	1.2	2.0	3.0	4.0

PART WEIGHT IN Kg.	SHEET	2	OF	2	REV. #	0
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