

Engel Injection Molding Machine

INSERT 200V/60 US - VERTICAL CLAMP / VERTICAL INJECTION

CLAMP

Clamp force	US tons	60
Clamp opening force	US tons	3.0
Clamp stroke (max.)	inches	13.78
Mold height (min - max)	inches	7.48 - N/A
Daylight (min - max)	inches	7.48 - 21.26
Platen size (HxV)	inches	27.5 x 17.7

ROTARY TABLE

Rotary table diameter	inches	38.38
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 200

Screw diameter	mm	25	30	35
Screw diameter	inches	0.984	1.181	1.378
Shot size ¹⁺²	oz	2.2	3.2	4.4
Injection capacity	in ³	4.2	6.0	8.2
Recovery rate ¹⁺²	oz/sec	0.4	0.6	0.9
Plasticizing capacity ¹⁺²	lbs/hr	88	135	209
Injection rate at max. press. ³	in ³ /sec	3.9	5.6	7.7
Injection rate (regenerative) ³	in ³ /sec	5.9	8.5	11.6
Injection velocity at max. press. ³	in/sec	5.1		
Injection velocity (regenerative) ³	in/sec	7.8		
Screw stroke	inches	5.51		
Injection pressure (max.) ⁴	psi	30000	30000	23505
Injection pressure (regenerative) ⁴	psi	19726	19726	15456
Screw speed range (min=25)	rpm	480		
Screw torque ⁴	ft-lbs	163		
Screw L/D ratio		24:1	20:1	17.1:1
Nozzle stroke	inches	16.92		
Nozzle force	US tons	1.7		

HYDRAULICS

Pump capacity (required)	gpm	16.1
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	4.8

GENERAL

Water requirements (max)	gpm	6
Machine dimensions (LxWxH)	inches	134 x 93 x 136
Machine weight	lbs	16000
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.

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

INSERT 200V/60 US
VERTICAL CLAMP
Data Sheet

ENGEL

STANDARDS & OPTIONS

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
- 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

Clamp

- Pneumatically actuated safety gate
- Mechanical safety dropbar
- 3 speed opening and closing
- Hydraulic and electric safety gate interlocks
- Direct hydraulic clamp with external quick close cylinder
- Precision linear bearings for platen stroke
- 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
- 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

Clamp

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

INSERT V INJECTION MOLDING MACHINE

Clamp (continued)

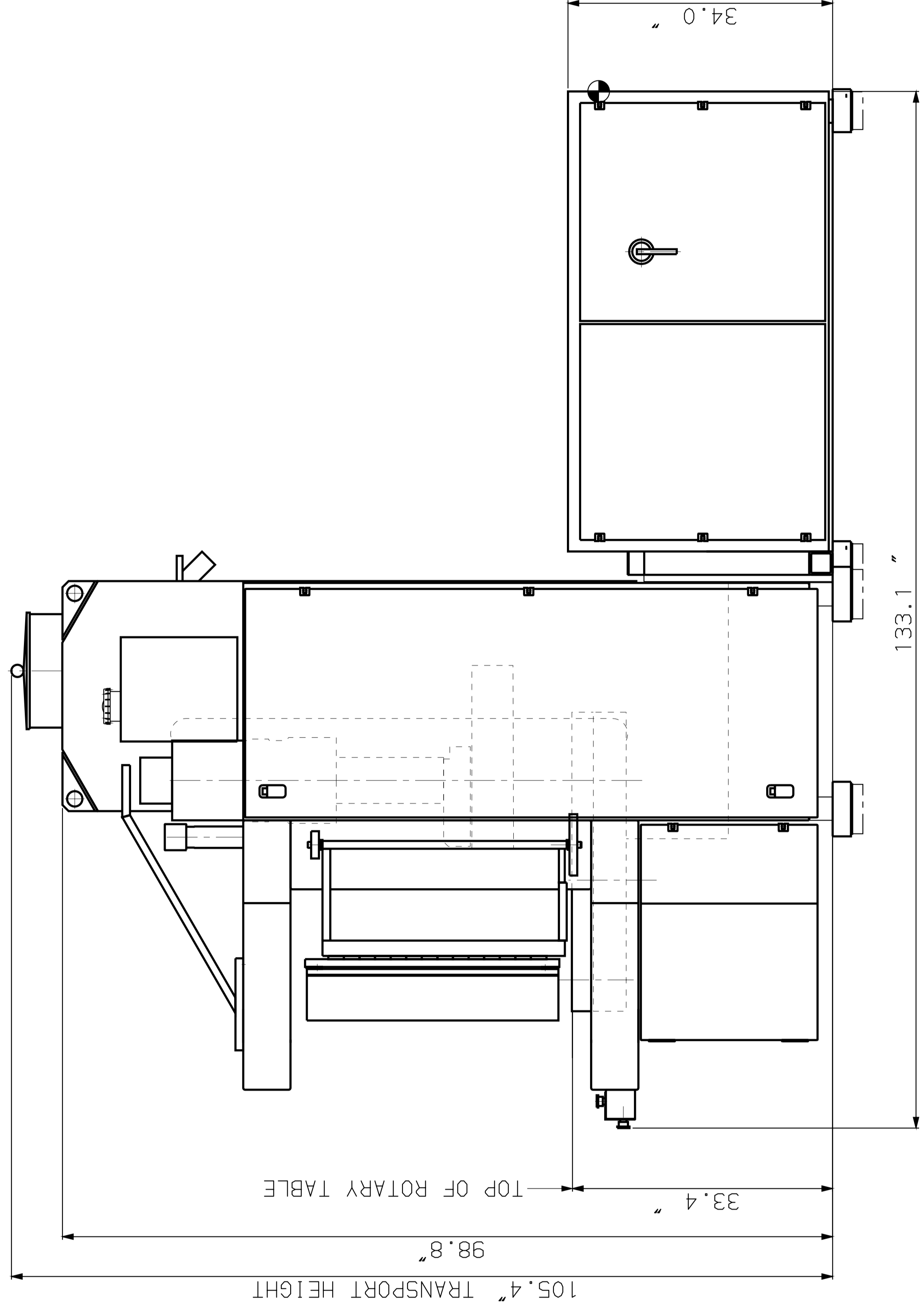
- Infrared light curtain in place of safety gate
- Positive return of mold ejector
- Additional fixed ejector
- Hot fluid connections through rotary union at table center
- Corepull(s) and unscrewing control
- Mold venting program
- Reduced minimum mold height

Hydraulics

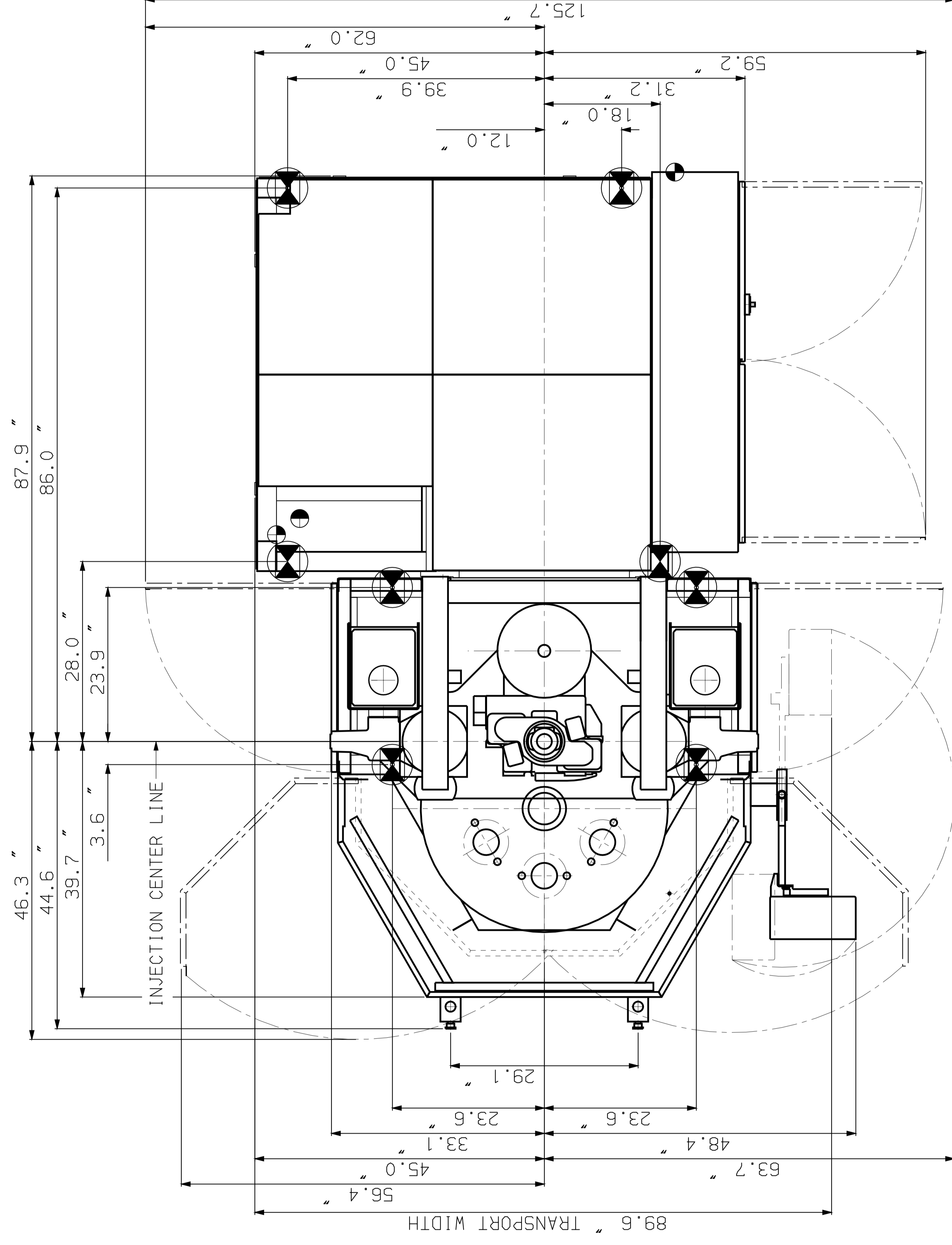
- Servo valve for closed loop injection speed, injection pressure, and screw back pressure control
- Increased hydraulic drive for increased plasticizing and injection speeds
- Accumulator system for increased injection speed or special functions
- Hot runner valve gate control (pneumatic or hydraulic)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

Controls, Electrics & Electronics

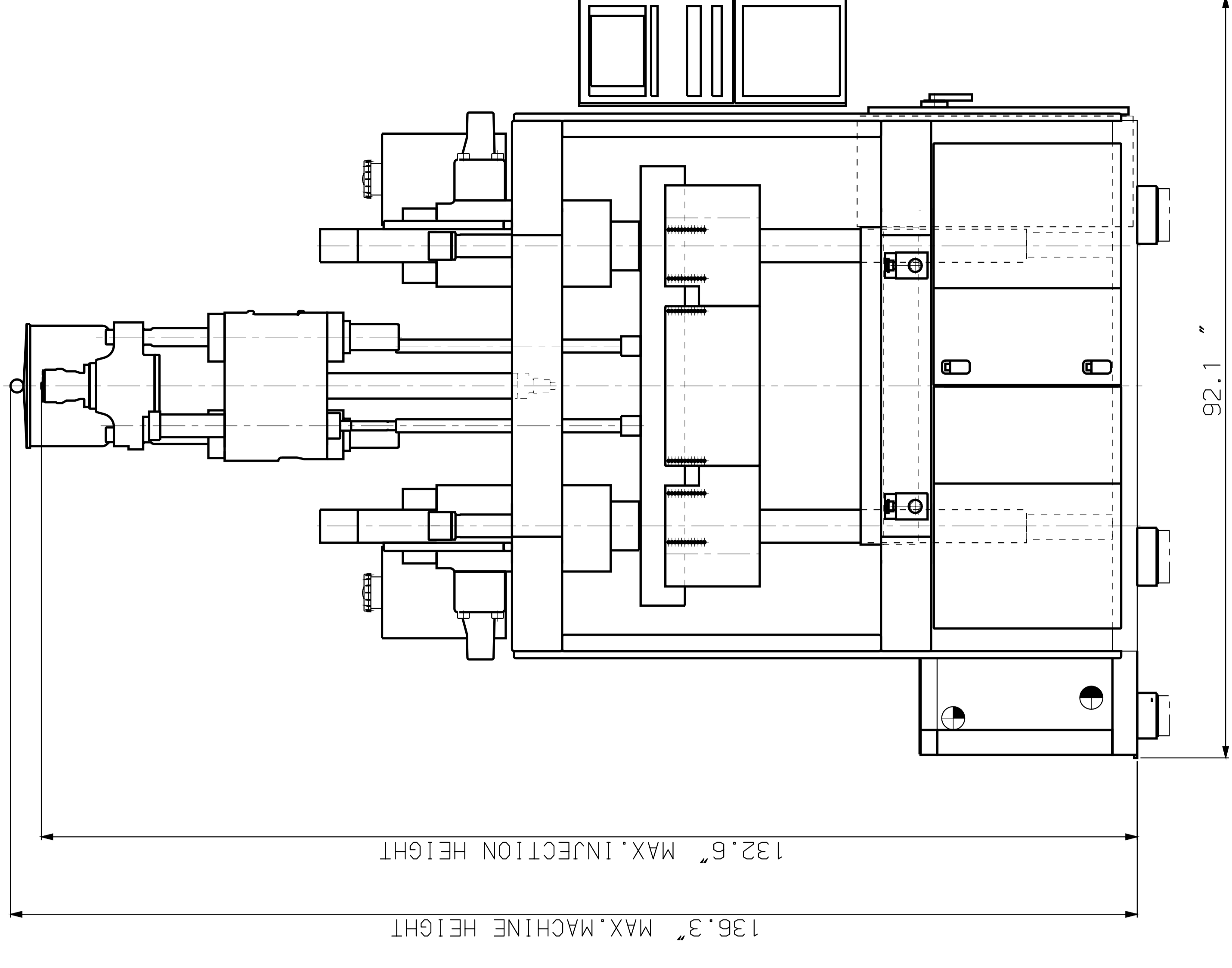
- CC100 Microprocessor control with high resolution color screen
 - Microplast and Microflow software packages
 - Process data graphics and reports
 - SPC (Quality data Statistics)
 - Automatic barrel/nozzle heat-up (7 day, 24 hour timer)
 - Power factor capacitors
 - Robot interface
 - Auxiliary electrical 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



VIEW AT SIDE OF MACHINE EQUIPPED WITH LIGHT CURTAIN



VIEW AT TOP OF MACHINE EQUIPPED WITH LIGHT CURTAIN

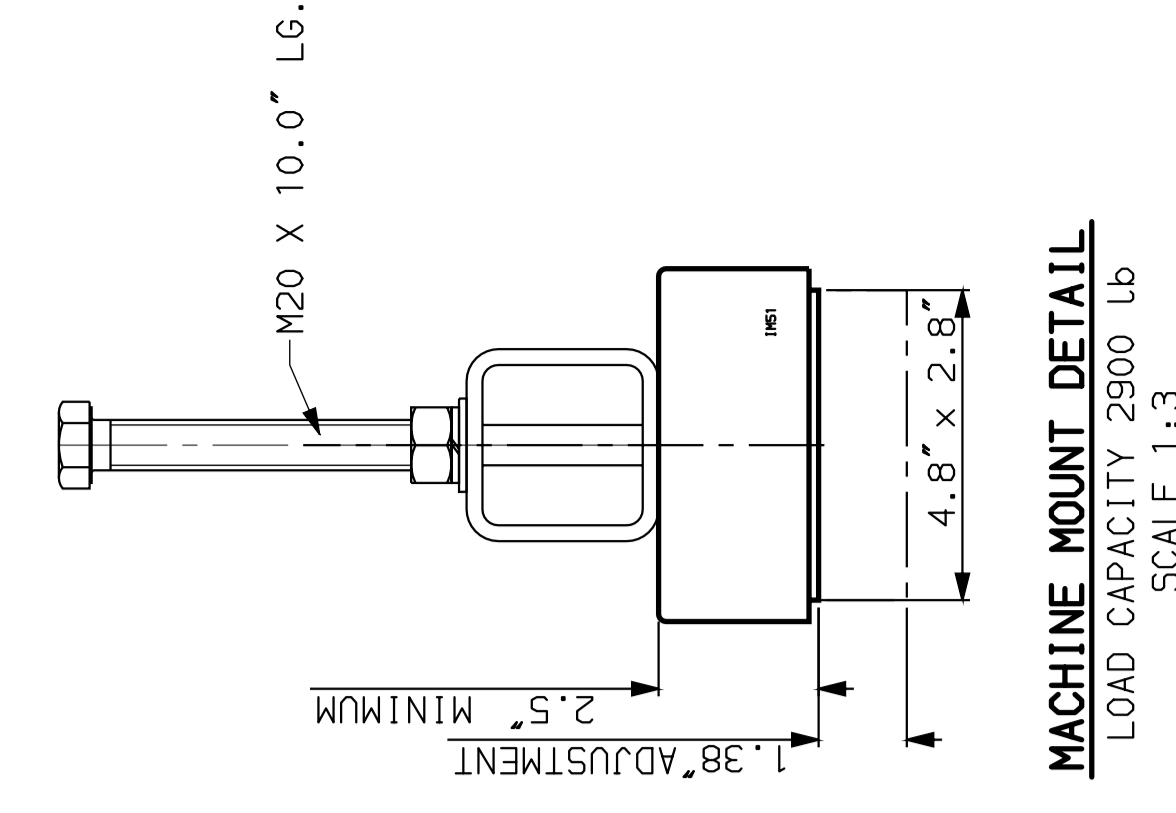
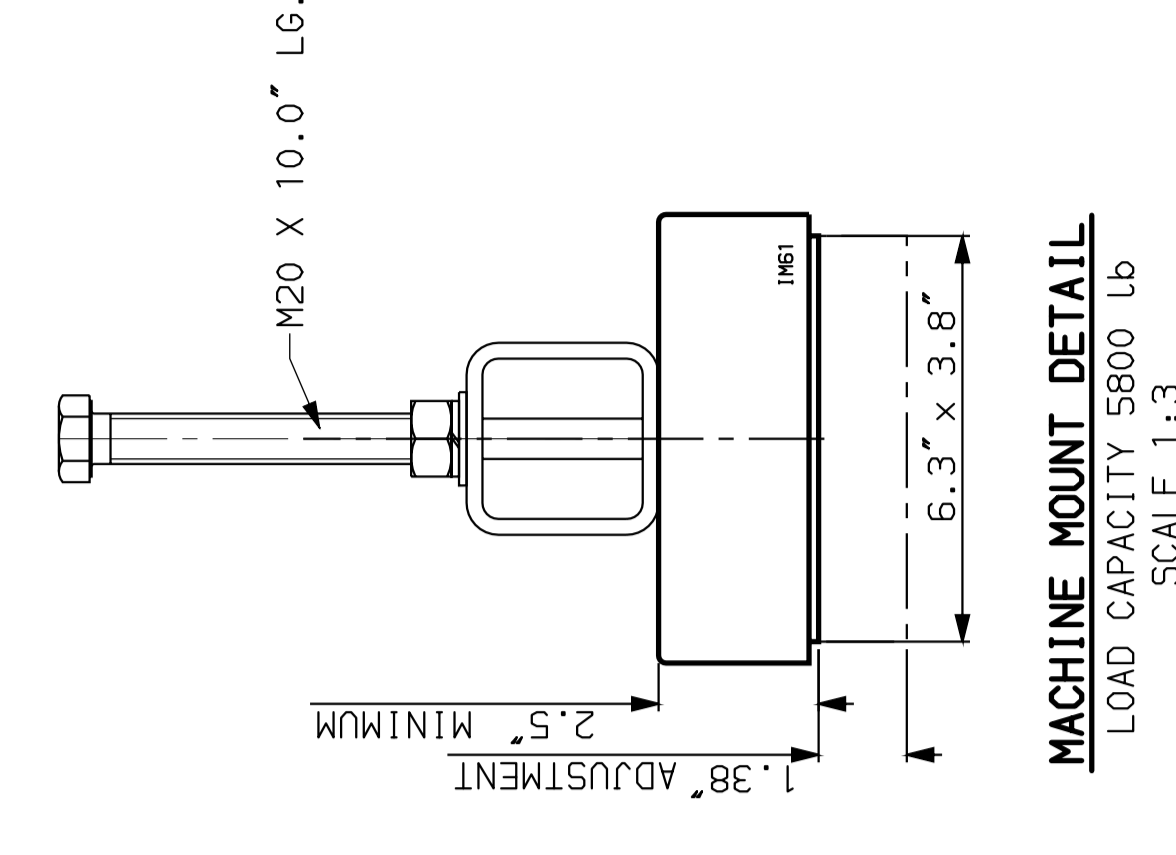


VIEW AT FRONT OF MACHINE EQUIPPED WITH LIGHT CURTAIN

- MACHINE MOUNT
- -STD. ELE. UTILITY ENTRANCE
- -AIR CONNECTION 1/4" NPT.
- -COOLING WATER CONNECTION IN & OUT 1" NPT.

NOTES:

- 1) DIMENSIONS ARE IN INCHES.
- 2) TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.



RELEASED
MICROFILM
REV. # 1

REV.	DATE	TITLE	BY	CHK'D	APP'D	REVISION
1	07/18/60	ES606VW60/200INJ.975 DIA				

MAIN DIMENSIONS		REPLACES	
SCALE	DESCRIPTION	DATE	BY
1:10	ES606VW60/200INJ.975 DIA	07/18/60	
RELEASER	SIZE	FROM	TO
	1 x 40"	0.5	0.5
	2000	1.25	0.15
	3000	0.15	0.2
	4000	0.15	0.3
	5000	0.15	0.5
	6000	0.15	0.8
	7000	0.15	1.2
	8000	0.15	2.0
	9000	0.15	3.0
	10000	0.15	4.0
	11000	0.15	5.0
	12000	0.15	6.0
	13000	0.15	7.0
	14000	0.15	8.0
	15000	0.15	9.0
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	95000	0.15	89.0
	96000	0.15	90.0
	97000	0.15	91.0
	98000	0.15	92.0
	99000	0.15	93.0
	100000	0.15	94.0

