Engel Injection Molding Machine

INSERT 330V/90 WP US - VERTICAL CLAMP / VERTICAL INJECTION

CLAMP				
Clamp force	US tons	90		
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	46.46		
Mold pitch circle diameter	inches	25.59"		
Hydraulic ejector stroke	inches	6.30		
Ejector penetration (above table)	inches	3.1		
Hydraulic ejector force	US tons	1.8		
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	in³	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]	in³/sec	5.0	6.8	8.9
Injection rate (regenerative)[3]	in³/sec	6.8	9.2	12.1
Injection velocity at max. press.[3]	in/sec	4.6		
Injection velocity (regenerative)[3]	in/sec	6.2		
Screw stroke	inches	6.30		
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	17.32		
Nozzle force	US tons	2.8		
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	137 X 93 X 142		
Machine weight	lbs	17000		
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 330V/90 WP US
VERTICAL CLAMP
Data Sheet

ENGEL

STANDARDS & OPTIONS

INSERT V INJECTION MOLDING MACHINE

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
- Hydrauilc 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

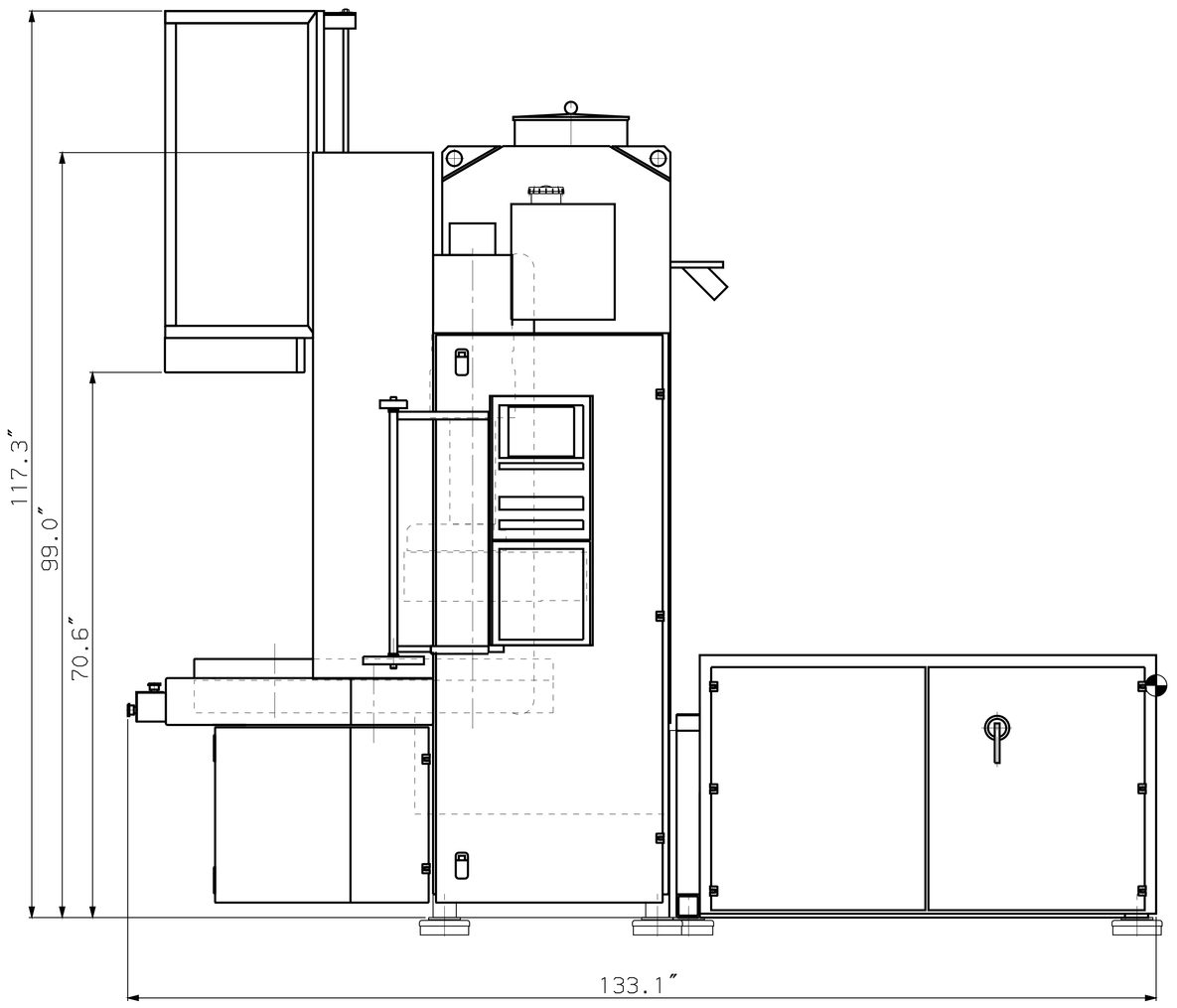
Clamp
- 3 or 4 mold stations with rotary union for mold water cooling at table center
- Hydraulic quick mold mounting system (moving platen only)
- Air blow-off valve
- Safety key switch for entry during ejector and core movement

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

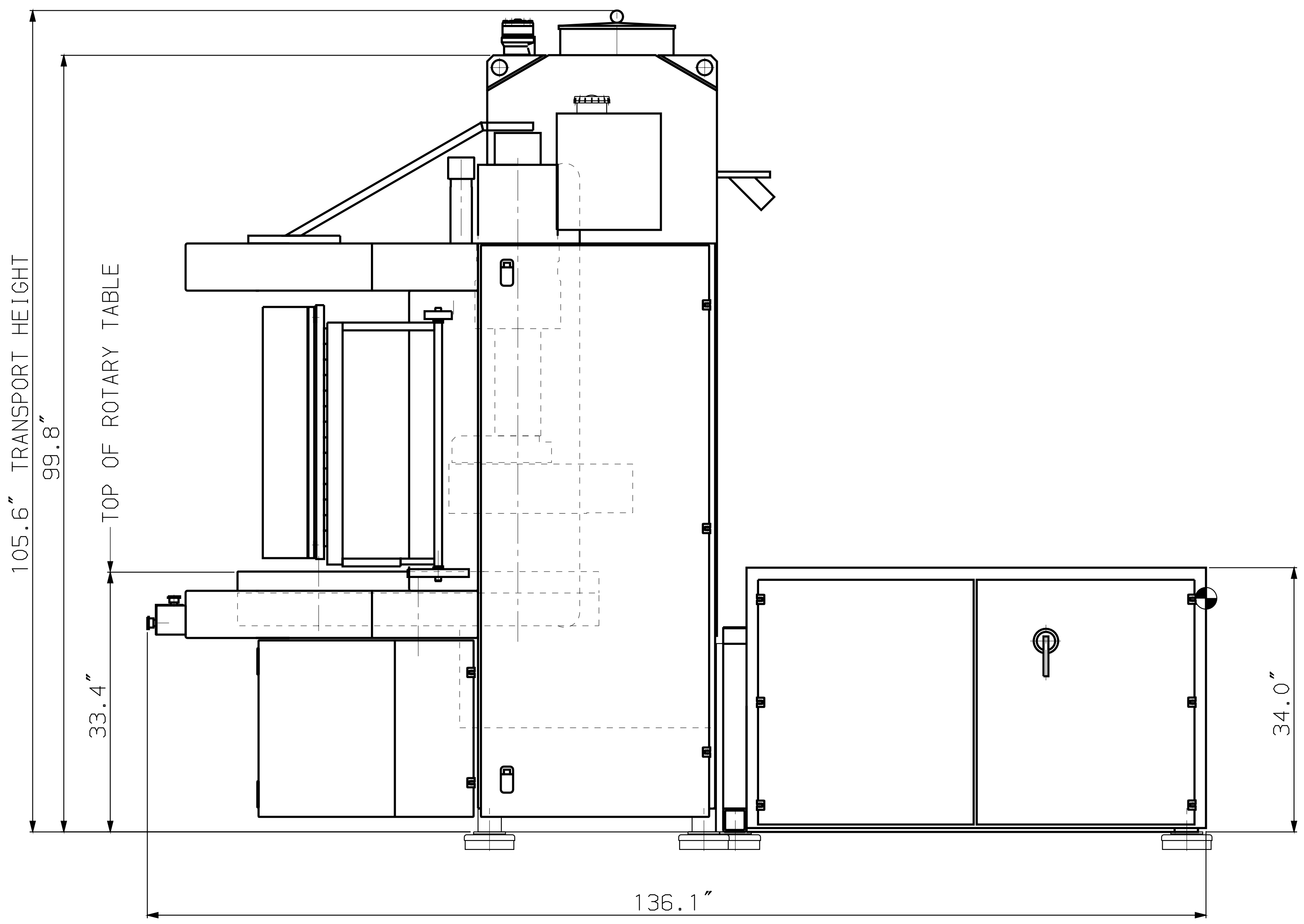
Hydraulics
- Servo valve for closed loop injection speed, injection pressure, and screw back pressure control
- Increased hydraulic drive for increased plasticizing and injection speeds
- Accumulator system for increased injection speed or special functions
- Hot runner valve gate control (pneumatic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

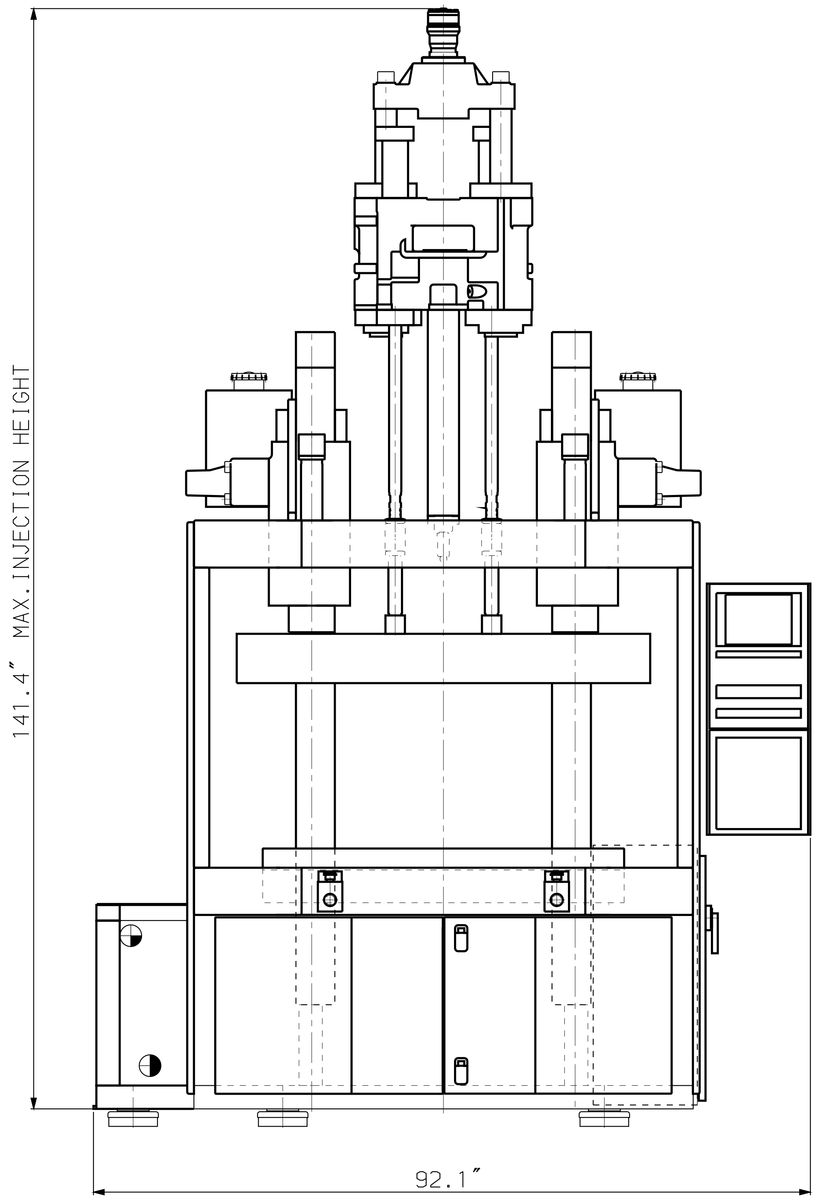
General
- Machine levelling/vibration mounts
- Waterflow controls
- Special painting of machine to customer's specifications
- Alarm sounder in addition to standard alarm light
- Spare parts packages
- Engel robots
- Training programs



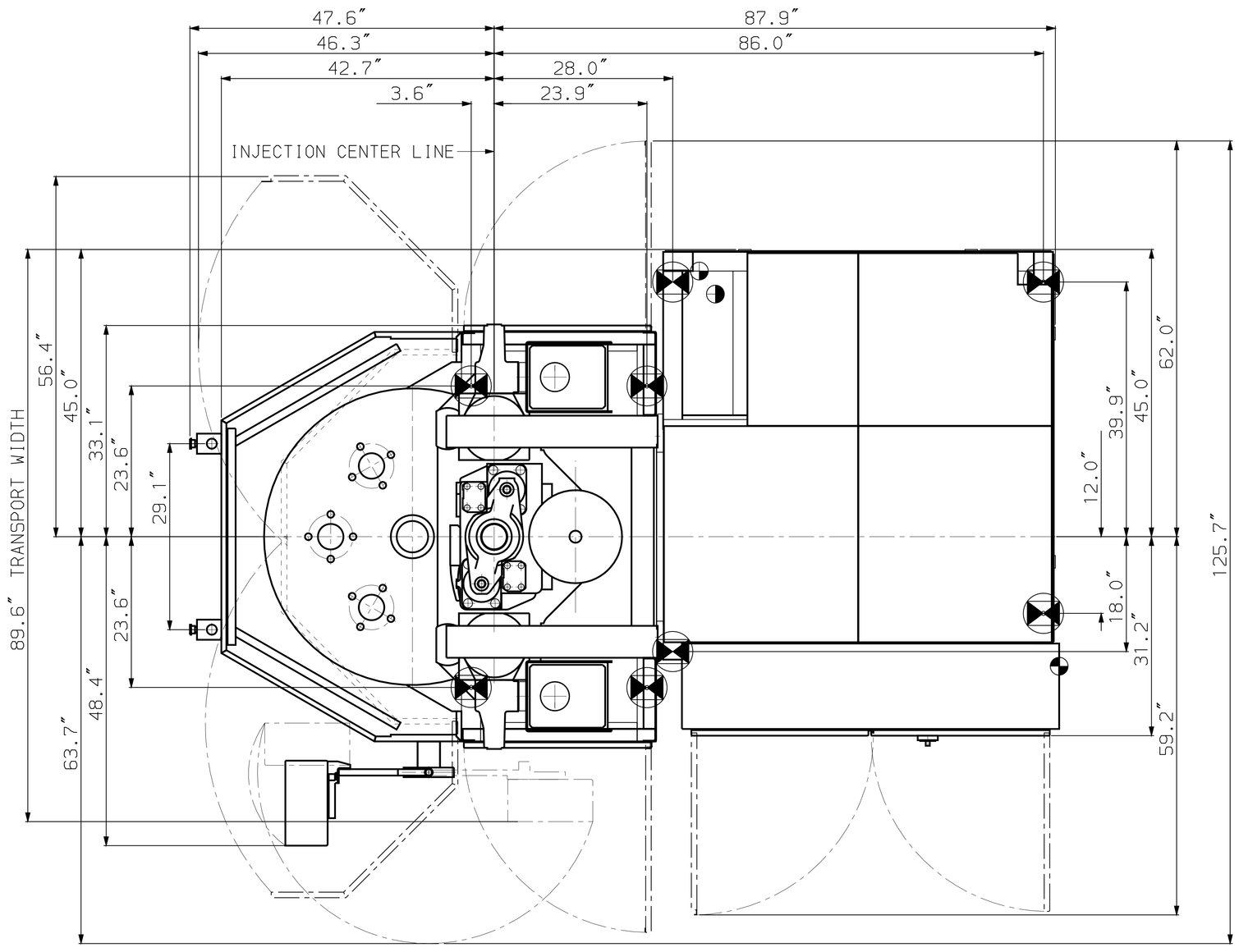
VIEW AT SIDE OF MACHINE EQUIPPED WITH PNEUMATIC GATE



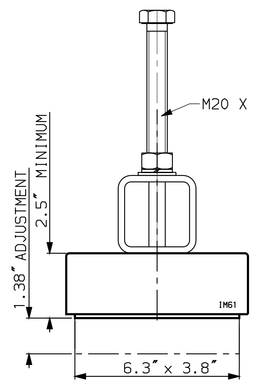
VIEW AT SIDE OF MACHINE EQUIPPED WITH LIGHT CURTAIN



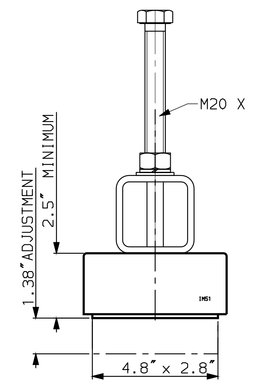
VIEW AT FRONT OF MACHINE EQUIPPED WITH LIGHT CURTAIN



VIEW AT TOP OF MACHINE EQUIPPED WITH LIGHT CURTAIN



MACHINE MOUNT DETAIL
LOAD CAPACITY 5800 Lb
SCALE 1:3



MACHINE MOUNT DETAIL
LOAD CAPACITY 2900 Lb
SCALE 1:3

-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.

REV#	ECO#	REVISION	DATE	NAME
12	2-27769	7700 KG WAS 5300 KG	05-MAR-02	CALIN P.
11	2-18592	MACHINE MNTS UPDATED	27-APR-01	KWB
10	9422	NEW	25-OCT-97	KEARNEY

SCALE: 1: 10
DESCRIPTION: MAIN DIMENSIONS ES090VVR/330 INJ.
ENGEL GUELPH - CANADA

MATERIAL: –
STOCK CODE #: –
BREAK SHARP CORNERS: –

	NAME	DATE
DR'N	KEARNEY	25-OCT-97
CHK'D	KWB	25-OCT-97

SIZE	FROM / TO	0.5 / 6.0	6 / 30	30 / 120	120 / 315	315 / 1000	1000 / 2000	2000 / >
DIM. TOL. IN MICRO METERS	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

REPLACES COPY FROM 7652.005.8050E REV.11
BM
DRAWING NO 9090.005.2399E
SHEET 2 OF 2
REV.# 12

RELEASED
MICROFILM
REV. # 12

12

PART WEIGHT IN Kg.
APPROX. 7700

(4) MOLD MOUNTING HOLES ø0.69" x THRU. C/BORE ø1.01" x 0.75" DEEP
(4) MOLD MOUNTING HOLES ø0.55" x THRU. C/BORE ø0.79" x 0.55" DEEP
(36) MOLD MOUNTING HOLES 5/8"-11UNC-2B x 1.38" DEEP C/BORE ø0.71" x 0.079" DEEP
8.86"
8.66"
3.00"
7.00"
5.00"
8.00"
9.00"
10.00"
26.57"
53.15"
MOVING PLATEN
(4) EJECTOR ROD HOLES 1/2"-13UNC-2B x 0.67" DEEP
8.27"
3.50"
4.13"
EJECTOR PLATE
VIEW C
(4) EJECTOR HOLES PER EACH STATION (16) HOLES ø1.06"
LOCATING DIAMETER ø4.000"+0.002" x 0.47" DEEP
(130) MOLD MOUNTING HOLES 5/8"-11UNC-2B x 1.18" DEEP C/BORE ø0.71" x 0.079" DEEP
46.46" ROTARY TABLE DIAMETER
25.59" MOLD ROTATION CIRCLE
6.40"
11.08"
13.00"
20.47"
21.26" MAX.DAYLIGTH
13.78" MAX.MOVING PLATEN STROKE
16.93" MAX.INJECTION STROKE
1.38" MAX.PROTRUSION
6.34"
7.48" MIN.MOLD HEIGHT
4.00" REMOVABLE LOCATING RING
REMOVABLE NOZZLE TIP 0.50" RADIUS, 0.125" DIA.ORIFICE
3.15" MAX.PROTUSION
ø1.0"
0.87" A/F
33.46"
C
6.30" MAX.EJECTOR STROKE
CENTER OF ROTARY TABLE
CENTER OF CLAMP UNIT
4.21" BASE PLATE
2.76" ROTARY TABLE
2.25" MIN.
3.0" MAX.
HYDRAULIC EJECTOR FORCE
RETURN 0.8 US TONS
FORWARD 2.0 US TONS
REGENERATIVE FWD. 1.2 US TONS
VALUES BASED ON 1625 Lb/in²
RELEASED
MICROFILM REV. # 1
PART WEIGHT IN Kg.

NOTES :

1. DIMENSIONS ARE IN INCHES UNLESS SPECIED.
2. TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.
3. 88.9 [3.5"] FOR STANDARD SPI EJECTOR HOLE PATTERN OPTIONAL ON REQUEST 82.6 [3.25"].

REV#	ECO#	REVISION	DATE	NAME
-	-	-	-	-
1	2-22859	ADDED QMM OPTION SHEETS	31-AUG-01	CALIN P.
0	2-22681	NEW	27-AUG-01	CALIN P.

SCALE 1:2.5

DESCRIPTION: PLATEN LAYOUT 90VVR **650PCD. 2 STN.**

ENGEL GUELPH - CANADA

MATERIAL –
STOCK CODE # –
BREAK SHARP CORNERS -

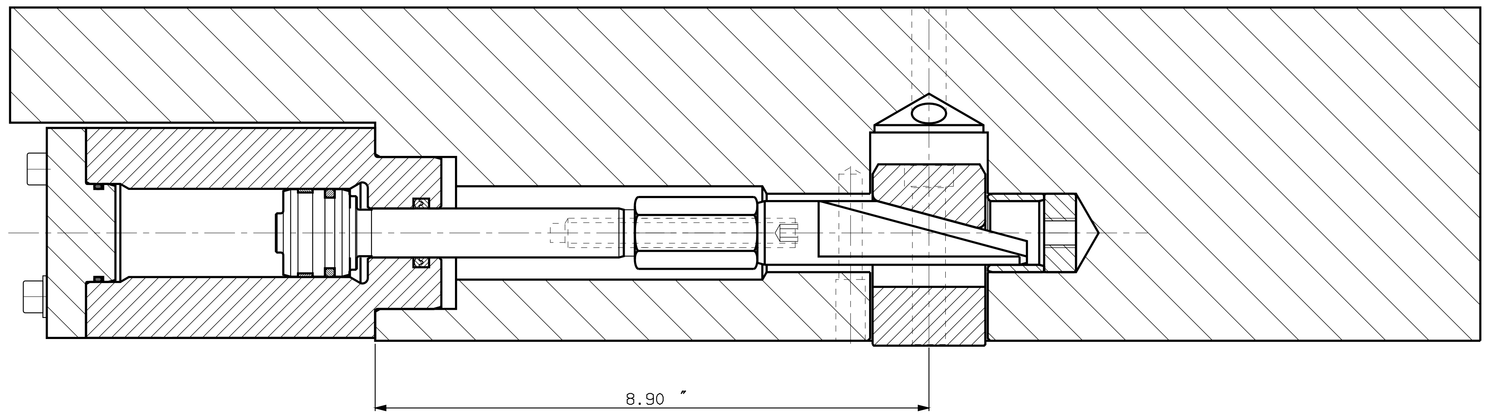
	NAME	DATE
DR`N	CALIN P.	27-AUG-01
CHK`D	A.D.	27-AUG-01

DIM. TOL. IN MICRO METERS							
SIZE FROM / TO	0.5 / 6.0	6 / 30	30 / 120	120 / 315	315 / 1000	1000 / 2000	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

REPLACES -
COPY FROM 9090.002.0365E REV.10
BM -

DRAWING NO **9090.002.7120E**

SHEET 3 OF 4 — REV.# 1

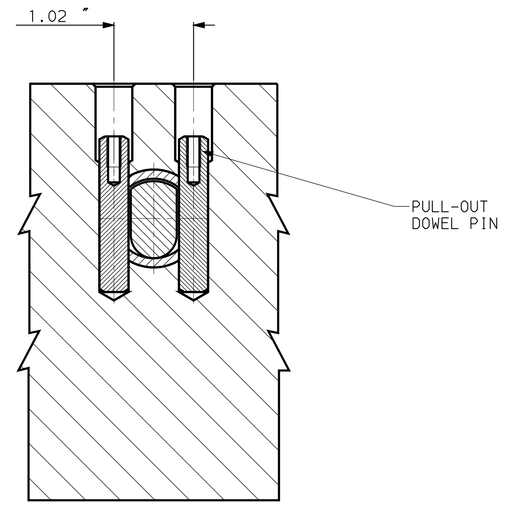


SECTION A-A

QUICK MOLD MOUNT SYSTEM

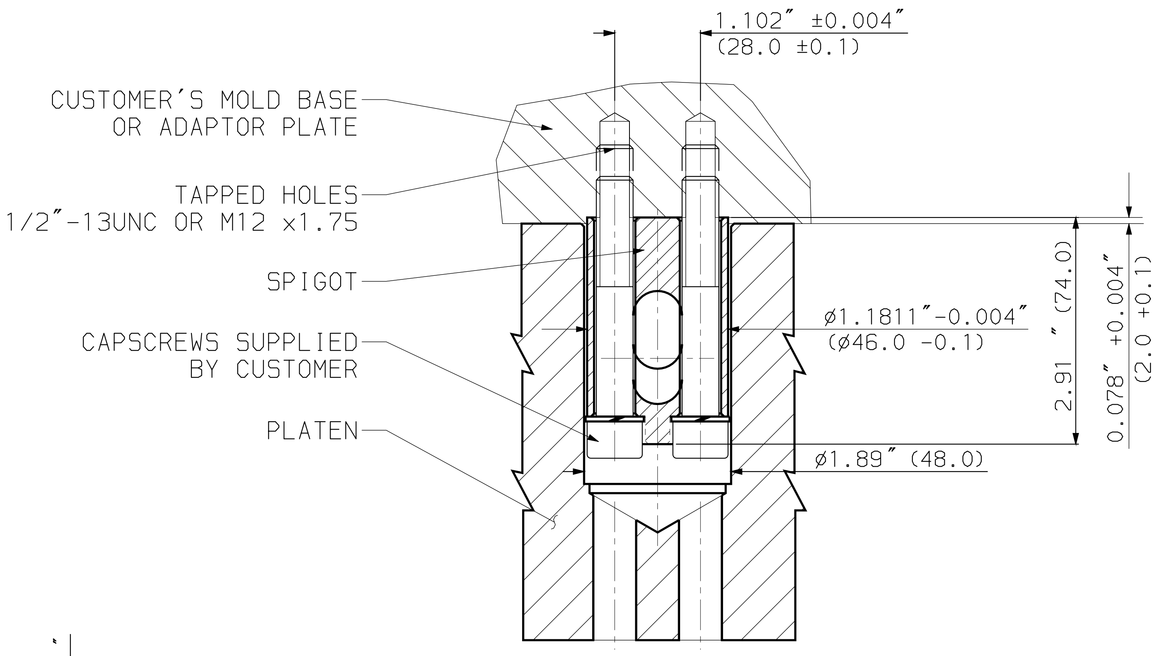
(OPTIONAL)

SCALE 1:1.25



SECTION C-C

SCALE 1:1



SECTION B-B

SCALE 1:1

RELEASED
MICROFILM
REV. # 1

REV.	ECO	REVISION	DATE	NAME
1	2-22859	ADDED QMM OPTION	31-AUG-01	CALIN P.
0	2-22681	NEW	27-AUG-01	CALIN P.

SCALE 1:2.5

DESCRIPTION: PLATEN LAYOUT 90VVR
650PCD. 2 STN.

ENGEL
GUELPH – CANADA

MATERIAL –
STOCK CODE – –
BREAK SHARP CORNERS –

	NAME	DATE
DR'N	CALIN P.	27-AUG-01
CHK'D	A.D.	27-AUG-01

SIZE	FROM	0.5	6	30	120	315	1000	2000
	TO	6.0	30	120	315	1000	2000	>
TOL. IN MICRO METERS	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

REPLACES –
COPY FROM 9090.002.036SE REV.10
BM –

DRAWING NO. 9090.002.7120E
SHEET 4 OF 4
REV.# 1

PART WEIGHT IN Kg. –