

# HULL 110 SERIES INJECTION MOLDING MACHINE

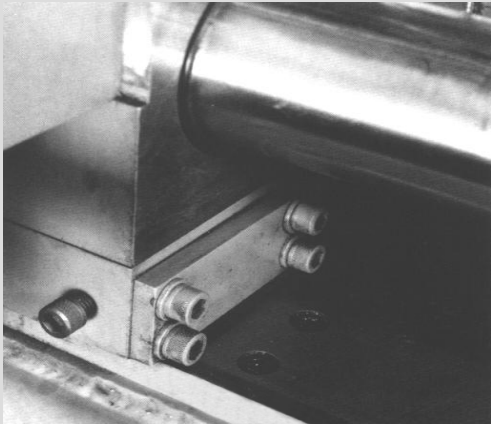
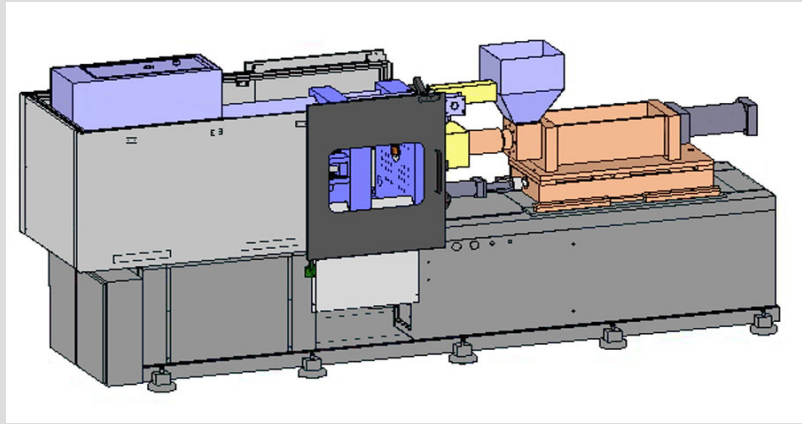


Figure 1



## FIRST, THE COMPANY BEHIND THE MACHINE

Hull started the thermoset evolution when leading custom and proprietary injection molders came to Hull to develop injection molding machinery for this material. As a result, Hull has pioneered most of the present technology.

Today, Hull injection molding machines incorporate the latest state-of-the-art advances.

## AN OVERVIEW OF THE 110 SERIES

Some standard features provided by the Hull 110 Series may be found on other makes of machines (often as optional extras), but no other machine offers all the advantages of the Hull 110 Series.

110 Series machines are particularly well suited to mold big, deep-drawn parts requiring large shots and high plasticizing rates.

## PRECISE CLAMPING

The Hull 110's clamps are all fully hydraulic to assure precise control.

Clamps decelerate just before the end of both the closing and opening strokes to prolong mold life and prevent broken ejector pins (which can occur if the mold slams against the stop on opening). Deceleration points are easily set by sliding cams on a cam bar on the front of the machine.

A "breathe" cycle is included as standard feature. The mold can be opened slightly for a precisely controlled interval at any point during the injection and/or hold periods. "Breathing" makes complex molds

easy to fill, adds more strength to the molded parts, and prolongs the life of polished mold surfaces by letting gases escape rather than trapping and burning them.

Extra-long clamp stroke permits the use of deep molds. Mold change is quick and easy since there are only four limit switches to adjust.

Usable platen area on Hull 110's is greater than machines of similar or even higher tonnage. Platens are guided on chrome plated tie rods ground from special alloy steel and run on shoes adjustable to compensate for wear. (See Figure 1.)

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Figure 2

## LARGE SHOT & HIGH PLASTICIZING RATE

Large shot capacity and high plasticizing rate of Hull 110 Series are principally the result of a high L/D ratio of the screw and a long injection stroke.

Screw rotation is controlled by a high-torque, infinitely-variable-speed hydraulic motor. The screw tachometer, supplied as standard equipment, lets you set screw speed precisely within the machine's range to achieve optimum speed for every molding situation, and to duplicate it each time you change molds or materials.

Hull 110 Series machines provide continuously-variable controls for injection speed and for screw back pressure. These give you better control of plasticizing and melt conditions, reduce nozzle drool, and reduce wear on the screw and barrel.

Two injection pressures are provided: high pressure for initial mold filling, and a lower holding pressure during cure. Injection speed is adjustable.

Injection units are available with

plungers if requested for use with BMC.

## TIGHT TEMPERATURE CONTROL

Barrel temperature control is adaptable to a wide range of material requirements. There are four zones on the 100-ton machine, five on the 200, six on the 300 and seven on the 500-ton model. A dual water-temperature controller can supply two different water temperatures to two manifold behind the barrel. By adjusting flow controls and temperature controller setting, you can get any temperature gradient you need over the full length of the barrel. Unlike other machines, the barrel on the Hull 110 is jacketed right up to the nozzle, eliminating freeze-ups.

Another important feature of the temperature control system is the fast cool-down feature. This makes it possible to shut down a machine in a few minutes—leaving material in the barrel without danger of freeze-up. After switching to fast cool-down, the barrel and screw temperature drop so rapidly that one or two shots will clear all plasticized material from the barrel. You can run right up to “quitting time,” shut down, and be ready to go again next morning.

Of course, there are circumstances when you do get a freeze-up, and if this happens, it's a simple matter to fix. On most models, the barrel swings out for easy access to the nozzle; and the hexhead threaded nozzle unscrews easily with the wrench supplied to expose the straight-through bore of the cylinder. (See Figure 2)

## SPLIT-SECOND TIMING

The entire molding cycle is controlled to split-second accuracy as follows:

1. Boost Injection—high pressure injection for rapid mold filling.
2. Injection Hold—low pressure injection until curing begins.
3. Charging Start—screw accepts more material from hopper.
4. \*Nozzle Backward—“Sprue break” feature; nozzle retracts before material starts to cure in the nozzle.
5. \*Degassing Start—mold opens slightly to “breathe”.
6. \*Degassing Finish—mold closes again.
7. Curing Finish—mold opens and parts eject.
8. Cycle Delay—pause between cycles, if required.

*\*Can be set to zero if not required.*

## OPTIONS AND MODIFICATIONS

Just about every feature you could want for normal thermoset molding is included as standard equipment. However, we can furnish conversion kits for thermoplastic molding, feeding systems for rubber materials, and fully developed feeding system for very high bulk-factor materials such as BMC.

We can also provide side core sequences of any type required, and nozzle shut-offs for certain thermoplastic materials.

Proportional pressure and speed control are available.

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# INJECTION MOLDING MACHINE SPECIFICATIONS

Model	110-25	110-45	110-80	110-100	110-200	110-300	110-600
Motor (HP-RPM)	7.5-1800	15-1200	25-1200	25-1200	30-1200	60-1200	60-1200
Clamp Pressure PSI	2380	2710	2200	3000	2875	3000	2875
Inj. Pressure PSI	2200	2710	2100	2600	2600	2000	2500
Oil Resv. Cap. US Gal	35	40	80	80	125	225	220
Approx. Ship Wgt (lbs.)	2200	3000	6000	6000	16000	35000	61,500
Water Supply-GPM	8	8	9	9	9	10	10
<b>Clamp Unit</b>							
Closing Force (tons)	25	45	80	100	200	300	600
Opening Force (tons)	3.8	6.7	7.5	10.2	16	17.5	60
Stroke (max in.)	8	8	18	18	18	24	30
Daylight (max in.)	16	16	26	26	30	42	60
Min. Shut Height (in)	8.25	8.25	8.25	8.25	12.25	18.25	15
Space Between Tie Rods (in)	10.5x8	15.25x10.25	17x14	17x14	20x20	29.5x24	37x37
Ejection Stroke (in)	2	2	4	4	4	4	6
Ejections Force (tons)	3.8	5	10	10	10	14	23
Dry Cycle Per Hour	1800	1800	1800	1800	1800	1800	1800
<b>Injection Unit</b>							
Injection Capacity (cu in.)	2.06	7.5	12.6	15.6	30.4	88	270
Injection Stroke (in)	3.5	6	8	8	10	14	30
Injection Rate (Max Cu In Sec)	2.65	4.8	8	8	12.8	15	34
Injection Speed (in per min)	270	230	320	320	252	240	211
Barrel Bore (mm)	22	32	36	40	50	70	90
Screw Speed (RPM)	10-360	10-280	10-270	10-270	30-254	30-150	N/A
Nozzle Touch Force (tons)	2.3	3.5	3.5	4.4	7.6	7	10
Nozzle Radius (in)	0.125	0.125	0.125	0.125	0.25	0.25	0.25
Hopper Capacity (lb)	20	30	50	50	75	175	350
Max. Inj. Pressure (PSI)	25,000	25,000	20,000	25,000	25,000	21,400	13,000
Screw Torque (ft. lb.)	145	330	416	416	850	1500	N/A
<b>Shot Size-ounces</b>							
Thermoplastic 120-tonnage	1	4	6	7.5	14	32	N/A
Thermoset 110-tonnage	1.3	5	8	10	18	42	N/A
BMC 110P-tonnage	2	7.5	12.6	15.6	30	85	270

Specifications subject to change. Specifications can be modified for specific application requirements.

## STANDARD FEATURES

Hydraulic Ejection-multi stroke  
 Sprue Break  
 Screw Tachometer  
 Low Pressure Close System  
 Chrome Plated Tie Rods  
 Boost Injection Cycle  
 Hydraulic Screw Drive  
 Swing-Away Barrel (80 Ton) Plus  
 Suck-Back  
 Hour Meter  
 Cycle Counter  
 Gate Cutter Circuit  
 Four Zone Heat 30 Amp Per Zone For Mold  
 Breathe Cycle

## OPTIONS

Smart Mold Control System  
 Injection/Compression Circuit  
 Hyd. Ejection-Stationary Platen  
 BMC Stuffer  
 Water Saver Valve  
 Hyd. Core Pull

## ELECTRICAL REQUIREMENTS

Motor 230/460V, 3PH, 60Hz  
 Heat 230V, 3PH, 60Hz  
 Controls 115V, 1PH, 60Hz

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