HYDRON SERVO

Hydraulic Injection Moulding Machine
100 to 450 Ton

High Productivity
Precision & Consistency
Energy Efficiency
Robust Construction
Advanced Clamp Design
• Separate Prefill Tank
• Fast Tonnage Build-up
• Special Hydraulics for Fast Clamp Movements

Generous Mould Space
• Accommodates Large Moulds

Closed Loop PID Temperature Control
• Provides precise Temperature Control
• Excellent Process Control & Stability

Twin Cylinder Injection Unit
• Uniform Load Distribution across Screw Centerline

Precise Linear Guideways
• Frictionless Linear Bearing
  Guideways improve the Injection Power & Cylinder Alignment

Large Ram Diameter
• Provides Uniform Force Distribution across Platen
• Provides Excellent Mould Squareness & Parallelism
• Reduces Mould Wear

Wide Skates for Platen Supports
• Reduced Platen Deflection
• Enhanced Life of Tie-bars
• Higher Mould Carrying Capacity

Endura-II - Advanced User Friendly Control
• Ergonomic Layout
• High Speed Microprocessor
• Graphical Presentation of Machine Features
• Self Diagnostic & Fault Finding Capability
• Parameter Entry in Absolute Value
• Central Monitoring System
• Statistical Process Control (SPC)

Servo Motor
• Outstanding Energy Saving
• Faster Response towards Hydraulic System
• Excellent Shot Weight Consistency
• Reduced Noise Level
The HYDRON Servo Series is a Fully Hydraulic Direct Locking Ram Type Machine.

- **Finite Element Analysis (FEA)** for Machine Components
  - Provides Maximum Strength to Weight Ratio

- **Hollow Headless Ram**
  - Minimized Friction - Faster Clamp Movement

- **Mono Seal & No Piston Rings**
  - Long Life of Sealing System
  - Ease of Maintenance

- **Fully Guided Knock Out Bar**
  - Provides Multi Point Ejection & Even Ejection Force

- **Cartridge Valves**
  - Smooth Operations
  - Low Energy Dissipation

- **Additional Control Features**
  - Parameter Entry in Absolute Values
  - User Customized Menu
  - On Board I/O Diagnosis
  - Mould Data Storage - 80 Nos.

- **CAN Bus System with Servo System**
  - Significant effect on overall Machine Performance as Servo System is Faster double than DFE System
  - Better Energy Efficiency as compare to DFE + VFD

**Energy Saving Upto 50%**

**Servo Motor**

**The New Edge Technology**

**Reduction of Standard Induction Motor with Servo Motor**

- **Reduced Heat Generation**
  - Only delivers hydraulic oil as it is needed
  - Reduces heat generation in hydraulic oil
  - Results in longer life for hydraulic components & enhanced oil life
  - Heat load on factory & cooling water consumption is reduced
  - Influence of oil temperature on machine repeatability is reduced
  - Improves cycle precision & repeatability

- **Servo Motor**
  - Improved repeatability
    - Closed loop system
  - Reduced energy consumption
    - Servo motor rpm can vary from 0 to 3000
    - Increased accuracy & precision
    - Rotation can be controlled to a fraction of a degree
    - High response
    - Reduced system inertia
    - Noise reduction
    - Quiet gear pump
    - Variable speed operations when required

- **Internal Gear Pump**
  - Reduced sensitivity to contamination
  - Increased reliability & lower maintenance costs
    - Only 2 moving parts
    - No internal wear parts
    - Lower cost spare parts

  - Bidirectional pump for fast response in pressure control
  - Pump is stopped intermittently during the cycle
  - Constant & non-pulsating discharge regardless of pressure conditions
  - Low operating noise

**Standard Induction Motor**

(3 Phase Asynchronous Motor)
Technical Specifications

**HYDRON SERVO 100**

- **INTERNATIONAL SIZE**: 1000 - 450
- **POWER PACK**: 11.5 kW
- **INJECTION UNIT**:
  - **INJECTION CAPACITY MAX. (GPPS)**: 165, 215, 272, 239, 303, 374
  - **THEORETICAL DISPLACEMENT**: 173, 225, 286
  - **INJECTION PRESSURE**: 2443, 1984, 1568
  - **INJECTION RATE**: 89, 116, 147
  - **INJECTION SCREW STROKE**: 180
  - **SCREW DIAMETER**: 35
  - **SCREW L/D RATIO**: 25.7
  - **SCREW SPEED**: 241
  - **SCREW TORQUE @ 172 BAR**: 876
  - **PLASTICIZING RATE (GPPS)**: 12
  - **NO. OF PYROMETER (BARREL+NOZZLE)**: 4+1
  - **TOTAL HEAT CAPACITY**: 11.3 kW
  - **CLAMP UNIT**:
    - **CLAMP FORCE**: 100
    - **CLAMP STROKE**: 560
    - **MAXIMUM DAYLIGHT**: 760
    - **MINIMUM MOULD HEIGHT**: 200
    - **PLATEN SIZE (H x V)**: 610 x 610
    - **DISTANCE BETWEEN TIE ROD**: 410
    - **EJECTOR FORCE**: 4.5
    - **MOULD WEIGHT CAPACITY**: 800 kg
    - **GENERAL**:
      - **SERVO DRIVE**: 11.5 kW
      - **OIL TANK CAPACITY - MAIN TANK**: 265 ltr
      - **OIL TANK CAPACITY - PREFILL TANK**: 140 ltr
      - **WATER REQUIREMENT**: 50 lpm
      - **CONNECTED LOAD**: 22.8 kW
      - **MACHINE DIMENSION (L x W x H)**: 5.02 x 1.56 x 2.27
      - **MACHINE WEIGHT**: 4800 kg

**HYDRON SERVO 150**

- **INTERNATIONAL SIZE**: 1500 - 450
- **POWER PACK**: 11.5 kW
- **INJECTION UNIT**:
  - **INJECTION CAPACITY MAX. (GPPS)**: 165, 215, 272, 239, 303, 374
  - **THEORETICAL DISPLACEMENT**: 173, 225, 286
  - **INJECTION PRESSURE**: 2443, 1984, 1568
  - **INJECTION RATE**: 103
  - **INJECTION SCREW STROKE**: 180
  - **SCREW DIAMETER**: 35
  - **SCREW L/D RATIO**: 25.7
  - **SCREW SPEED**: 241
  - **SCREW TORQUE @ 172 BAR**: 876
  - **PLASTICIZING RATE (GPPS)**: 13
  - **NO. OF PYROMETER (BARREL+NOZZLE)**: 4+1
  - **TOTAL HEAT CAPACITY**: 11.3 kW
  - **CLAMP UNIT**:
    - **CLAMP FORCE**: 150
    - **CLAMP STROKE**: 625
    - **MAXIMUM DAYLIGHT**: 825
    - **MINIMUM MOULD HEIGHT**: 200
    - **PLATEN SIZE (H x V)**: 715 x 715
    - **DISTANCE BETWEEN TIE ROD**: 510
    - **EJECTOR FORCE**: 4.5
    - **MOULD WEIGHT CAPACITY**: 1500 kg
    - **GENERAL**:
      - **SERVO DRIVE**: 11.5 kW
      - **OIL TANK CAPACITY - MAIN TANK**: 415 ltr
      - **OIL TANK CAPACITY - PREFILL TANK**: 180 ltr
      - **WATER REQUIREMENT**: 50 lpm
      - **CONNECTED LOAD**: 22.8 kW
      - **MACHINE DIMENSION (L x W x H)**: 5.56 x 1.72 x 2.43
      - **MACHINE WEIGHT**: 7300 kg

* Under Specified Condition  ** With Open Nozzle
Technical Specifications

**HYDRON SERVO 200**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INTERNATIONAL SIZE</th>
<th>POWER PACK **</th>
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<th>INJECTION CAPACITY MAX. (GPPS)</th>
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<th>INJECTION PRESSURE</th>
<th>INJECTION RATE**</th>
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<th>SCREW SPEED</th>
<th>SCREW TORQUE @ 172 BAR</th>
<th>PLASTICIZING RATE (GPPS)**</th>
<th>PLASTICIZING RATE (BARRIER SCREW)</th>
<th>TOTAL HEAT CAPACITY</th>
<th>CLAMP UNIT</th>
<th>CLAMP FORCE</th>
<th>CLAMP STROKE</th>
<th>MAXIMUM DAYLIGHT</th>
<th>MINIMUM MOULD HEIGHT</th>
<th>PLATEN SIZE (H x V)</th>
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**HYDRON SERVO 250**

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<th>SCREW L/D RATIO</th>
<th>SCREW SPEED</th>
<th>SCREW TORQUE @ 172 BAR</th>
<th>PLASTICIZING RATE (GPPS)**</th>
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<th>CLAMP FORCE</th>
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* Under Specified Condition  ** With Open Nozzle
## Technical Specifications

### HYDRON SERVO 350

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Design Advantages & Features

**CLAMP**
- Hollow Headless Ram with Mono Seal & No Piston Rings
- Large Prefill Designed for Fast Tonnage Build-up
- Rapid Traverse Cylinders
- Conical Strain Rod Nuts & Controlled Stress on Tie Rods
- Adjustable moving Platen Skates
- Rigid Cast Platens with FEA
- Adjustable Pressure setting of Closing & Opening Stage
- Proportional Speed Control with 5 Closing & 5 Opening Speed
- Adjustable 2 Stage Mould Safety Pressure & 1 Stage Speed
- Position Based Rampling for Accurate Position Switching - Precise Speed & Pressure Control
- Linear Position Transducer for Accurate Clamp Position Control
- Sensitive Mould Protection with Try Again Circuit
- Stage Wise Actual Time Display
- Insert Moulding Program
- Actual Tonnage Display on Screen

**EJECTOR**
- Knock-Out Bar
- 2 Stage Programmable Ejector Forward Profile with Soft Eject
- Ejector Speed & Pressure adjustable on Screen
- Linear Transducer for Ejector Position
- Pulsating Ejector Strokes upto 9 Pulses
- Intermediate Retract Set Point
- Ejector Stay Forward & Forward Dwell Timer

**INJECTION**
- 6 Stage Injection Velocity & 15 Stage Injection Pressure Profile
- 5 Stage Screw Speed & 5 Stage Back Pressure Control (Setting) through Screen
- Digital setting of Extruder RPM & Digital Read out of Actual RPM
- Wide Choice of Injection Units with A’A-B Screw/Barrel Combinations
- Easy Injection Unit Swivelling
- Switch Over from Fill to Pack based on Position or Time
- Linear Position Transducer for Accurate Injection Position Control
- Injection Decompression Before / After Refilling or Both
- Semi-Auto Purge, Cold Slug removal & Intrusion Moulding Programs
- Aluminum Chequered Plate below Purge Area
- Sprue Break with Timer
- Injection start, Suck-back & Melt Decompression - Delay Timer
- Graphically Adjustable Alarm Bands for Injection Pressure
- Sliding Hopper

**TEMPERATURE CONTROL**
- Actual Current Display of Heating Zones
- Heater Failure & Thermocouple Failure Detection
- Accurate PID Temperature Control settable on Screen
- Feed Throat Temperature Indication
- Auto Heat Startup & Shutdown
- Heat Standby after set number of Cycles
- Soak Timer for Cold Start Protection
- High / Low Temperature Alarm
- Set & Actual Temperature Data with Bar Graph
- Insulated Heater Band

**CONTROLS**
- 22 Parameter Monitoring for last 1000 cycles with Graphics
- 10.4” TFT Color Display with Alpha - Numeric Keypad
- Actual Injection Speed & Pressure Graph Display
- 80 Mould Data Storage
- Configurable Multilevel Password with Operator’s Name
- Graphically Presentation of Hourly Production
- Customized Setup Menu
- High / Low Limit Display for Each Adjustable Parameter
- I / O diagnosis - Analog & Digital
- Timer Precision in 0.01 Second
- Change Log Menu: logs last 100 Set Points Changes with Time & Date
- Statistical Process Control (SPC) with Graphics
- Process Mode: Functions with its Co-fuctions on a Single Key Press
- Note Pad & Maintenance Scheduling
- Freely Programmable Smart Outputs
- Over View Screen with Graphical Display of Machine Functions
- Soft Keys for Fast Access of Select Menus
- Auto shut down
- Visual & Audible Alarm
- 1000 Alarm History with Date & Time Log
- Printer Interface with USB Port

**HYDRAULICS**
- Servo Motor Driven Pump
- Ergonomic Hydraulic Layout for Easy Approach
- Valves Placed near Actuators for Rapid Response
- Pre-Heating Circuit for Hydraulic Oil
- Low Oil Level Audible Alarm & Motor Shut Down
- Continuous Oil Filtration with 10 Micron Filter
- Audible Alarm for Filter Clogging

**AVAILABLE OPTIONS**
- Air Ejection
- Hydraulic Core pull
- Feed Throat Temperature Control
- PID Oil Temperature Control
- Part Drop Detect for Single Cavity
- Water Battery with Temperature Indicator
- Water Manifolds
- Robot Interface (SFI / EUROMAP)
- Extra Heating Zones
- Nozzle Contact Force by Pressure Switch
- Jam Bar
- T-slot Platens
- Extended Daylight with Ram Spacer
- Ejec Transmit Limit Switch Verification
- Bimetallic Barrel & Hardened / Coated Screw
- Special Paint

All specifications reflect average values based on typical machine layouts. Actual figures will vary depending on final machine configuration. Performance specifications are based on theoretical data. Photograph may show attachments or accessories, which may not be part of the standard scope of supply. Due to continual improvements, specifications & some components are subject to change without notice.

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