Digital Servo Reciprocating Sprayers

For Die Casting Machines
400 Ton - 2000 Ton
Your “Window to the World®”
of Die Cast Automation

Advance Automation is your “Window to the World®” for robotic reciprocating die spray systems. Advance is the leader in spraying technology, with many firsts in the industry. We developed the first reciprocating spray system in 1966 and introduced the first hydraulically operated reciprocator in 1971, the first servo controlled reciprocator in 1981, and the first digital reciprocators in 1994.

We are never satisfied with yesterday’s accomplishments. We are innovators.

Utilizing SDRC I-DEAS 3D solid modeling design software and cutting-edge manufacturing processes have set us apart.

We offer a complete line of reciprocating die spray systems to fit 300-to-1,800 ton die casting machines.

In-House Manufacturing Capability

Advance automation products are made in-house at our Benton Harbor, MI, facility. By taking charge of every step of the manufacturing process, we can assure process consistency.

Process consistency is the first step in achieving total quality. A reliable, consistent process begins with reliable equipment.

The new millenium brought a three-phase plant renovation and modernization project to our facility. By improving our process and adding new equipment, we are better able to serve our customers with a more efficient manufacturing process.

Parts are made by skilled craftsmen on state-of-the-art CNC and other computer-controlled milling equipment.

Engineering is another critical part in the manufacturing process. Advance engineers design equipment from measurements taken of your die casting cell to ensure that our equipment performs at the optimum in your unique casting environment.

Advance servo sprayers made in America are known for their durability, reliability, accuracy, ease of operation, and low maintenance costs. This means a consistent, quality part at a world competitive price.
**Sprayer Features**

**Motor and Feedback**

The Advance reciprocating sprayer is controlled by a servo motor drive system attached directly to the gear reducer for maximum torque and efficiency. Because there are no air cylinders, hydraulics, cams, or motor brushes, reliability is greatly improved.

Continuous positioning accuracy is achieved by a closed-loop resolver feedback system. Positioning accuracy of .020 inches provides constant repeatability.

**Air & Lubrication Valves**

No external valve packages are needed. All air and spray lubrication valving is mounted directly on the sprayer. A filter on the lube input line prevents foreign material from entering the system.

One lube zone comes standard with additional lube zones and Super Air Blast optional. The Air Blast is standard. The sprayers can spray lube and blow-off either simultaneously or sequentially.

Additionally, if Lube 2 and Air Blast options are selected, any combination of Lube 1, Lube 2, or Air Blast can be selected and programmed to function independently at any time.

**Main Controller & Remote**

The main controller on the Advance sprayer is a color touch screen controlled HMI. It can store 500 parts programs alphanumerically in Flash memory, automatically recalling specific spray patterns for each part.

The easy-to-use controller has touch screen and backlit display to guide you step by step through programming options. No special computer training is needed.

The handheld remote allows the operator to manually program the sprayer movement from a visually convenient location near the open die. Spray and air blast zones are monitored during programming for maximum spray efficiency.
The Advance line of straight-line digital reciprocating sprayers includes the popular SR-1155; its little brother, the SR-1145; and its big brother, the SR-1165. They fit 300 to 1,800 ton DCMs. See the sizing chart below.

These feature-laden workhorses have been designed to stand up to rigorous work schedules with minimum maintenance.

Manifold capacity is 75 lbs. on the SR-1145 and SR-1155 and 125 lbs. on the SR-1165.

**Design and Construction**

The Advance sprayer has two axis. One is fully programmable to position the spray manifold into the die area. The second axis has an 8-inch horizontal travel and can be operated from the control panel or a handheld remote to adjust the reciprocator for different cover die thicknesses.

The horizontal slide base with a pedestal mount is useful for many applications. For some applications, the pedestal mount can be eliminated. Various risers are also available to avoid obstructions like water lines.

A gear reducer is mounted on the top of the slide base. The main drive arm carries the vertical snout with manifold attached to the end into the die. The snout has a 12-inch adjustment to allow different spray manifolds to match the die being sprayed.

**Sprayer Diagnostic**

Fault indicators are located as LEDs on the main controller and include:

**Motor Faults**
- Input/Output Fault
- Current Limit
- Over Temperature
- Resolver Fault and
- Over Current

**PC Faults**
- Die Open Fault
- Emergency Retract &
- Communication Error

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**Features & Specification**

Solidworks 3D modeling program is used to design the sprayer.

Building the sprayer according to engineering designs.

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**From Concept . . .
. . . to Completion**

SR-1155

**SPRAYER SIZING MATRIX**

<table>
<thead>
<tr>
<th></th>
<th>300T</th>
<th>400T</th>
<th>600T</th>
<th>800T</th>
<th>1000T</th>
<th>1200T</th>
<th>1400T</th>
<th>1600T</th>
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<tbody>
<tr>
<td>SR-1145</td>
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<tr>
<td>SR-1165</td>
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Features & Specification

Straight Drop Sprayers

Arc Profile Sprayer
Advance Has Many Manifold Options

Advance makes a variety of bar and picture frame manifolds, as well as custom manifolds for special die applications.

Bar manifolds are typically 13 to 37 inches long and offer up to nine spray heads.

Picture frame manifolds are our most popular manifolds and come in a variety of sizes in dual and single zone.

Spray heads can be placed in an unlimited number of patterns for even the most complex parts. They can also be fitted with standoffs and on and off plane Ts to give even more location options.

Advance also has conversion adapters so you can use Advance spraying technology on your present reciprocating spray system.

Manifold Sizing Chart

Advance has changed its standard sizes for Picture Frame® Manifolds so that stock extrusions can be used for both bar and Picture Frames® as the following chart illustrates.

<table>
<thead>
<tr>
<th>Bar or PF Top</th>
<th>PF Side or Bottom</th>
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</thead>
<tbody>
<tr>
<td>13”</td>
<td>13”</td>
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<tr>
<td>19”</td>
<td>19”</td>
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<tr>
<td>25”</td>
<td>25”</td>
</tr>
<tr>
<td>31”</td>
<td>31”</td>
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</table>

Made to order sides: 7”, 10”, 16”, 22”, 28”
After years of research and development, Advance, the industry leader in spraying technology, has developed the ultimate spray head for die spraying: the Advance Model SH-3004 spray head.

The Model SH-3004 has fewer parts and an improved design over previous Advance models. Adjustability is greatly improved with a full three-turn range compared to 1-1/2 on the Model 2000. There is also improved atomization consistency over a larger variation of air to lube pressure.

The Model SH-3004 offers a wide range of spray patterns with nine interchangeable nozzles from ultra-fine mist to maximum output. Various extension tubes are also available. Air and lube pressures can be set independently and are adjustable from 40 to 110 psi.

The spray head is also retrofittable on any of our spraying reciprocators. Manifold conversions are available for any brand of sprayer.

All internal parts are warranted for 1,000,000 cycles. The spray head body has a 10-year warranty.

**Note: SH-TUBE-001, SH-TUBE-002, and SH-TUBE-003 consist of: 4079 (O-ring), 9649 (adapter, nozzle to tube), 5998 (adapter, 1/8 mnpt to 1/4 tube), 9903-016 (2" tube), 9903-032 (4" tube), 9903-048 (6" tube)**

<table>
<thead>
<tr>
<th>Nozzle Design</th>
<th>SH-3004 Quad Nozzle Ejector Side (SH-3004QE)</th>
<th>SH-3004 Quad Nozzle Cover Side (SH-3004QC)</th>
<th>SH-3004 Quad Opposed Outlet (SH-3004)</th>
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</thead>
<tbody>
<tr>
<td>8977 (Standard)</td>
<td>SH-3004QE-8977</td>
<td>SH-3004QC-8977</td>
<td>SH-3004-8977</td>
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<tr>
<td>8967</td>
<td>SH-3004QE-8967</td>
<td>SH-3004QC-8967</td>
<td>SH-3004-8967</td>
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<tr>
<td>8969</td>
<td>SH-3004QE-8969</td>
<td>SH-3004QC-8969</td>
<td>SH-3004-8969</td>
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<tr>
<td>8948</td>
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<td>SH-3004QC-8948</td>
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<td>8968</td>
<td>SH-3004QE-8968</td>
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<tr>
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<td>SH-3004QC-8980</td>
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<tr>
<td>8975</td>
<td>SH-3004QE-8975</td>
<td>SH-3004QC-8975</td>
<td>SH-3004-8975</td>
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<td>SH-TUBE-001</td>
<td>SH-3004QE-T-001</td>
<td>SH-3004QC-T-001</td>
<td>SH-3004-T-001</td>
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<tr>
<td>SH-TUBE-002</td>
<td>SH-3004QE-T-002</td>
<td>SH-3004QC-T-002</td>
<td>SH-3004-T-002</td>
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<tr>
<td>SH-TUBE-003</td>
<td>SH-3004QE-T-003</td>
<td>SH-3004QC-T-003</td>
<td>SH-3004-T-003</td>
</tr>
</tbody>
</table>
After years of research and development, Advance, the industry leader in spraying technology, has developed the ultimate spray head for die spraying: the Advance Model SH-3000 spray head.

The Model SH-3000 has fewer parts and an improved design. Adjustability is greatly improved with a full three-turn range compared to 1-1/2 on the Model 2000. There is also improved atomization consistency over a larger variation of air to lube pressure.

The Model SH-3000 offers a wide range of spray patterns with nine interchangeable nozzles from ultra-fine mist to maximum output. Various extension tubes are also available. Air and lube pressures can be set independently and are adjustable from 40 to 110 psi.

The spray head is also retrofittable on any of our spraying reciprocators. Manifold conversions are available for any brand of sprayer.

All internal parts are warranted for 1,000,000 cycles. The spray head body has a 10-year warranty.

**Note: SH-TUBE-001, SH-TUBE-002, and SH-TUBE-003 consist of: 4079 (O-ring), 9649 (adapter, nozzle to tube), 5998 (adapter, 1/8 mnpt to 1/4 tube), 9903-016 (2” tube), 9903-032 (4” tube), 9903-048 (6” tube).**
The ADVANCE SRL-600 sprayer is designed for 250 ton to 600 ton die casting machines. The SRL-600 incorporates state-of-the-art technology in a robotic drive which provides smooth operation with super fast speed of 80 inches per second. Continuous positioning accuracy is achieved by a “closed-loop” servo control system. Standard with a touch screen controller, with multiple program storage capability. Its unique construction feature permits use on zinc, and hot chamber magnesium machines as well as aluminum. The sprayer has two axes. The sprayer requires no external valve package. Uses standard ADVANCE spray manifold and spray heads. Advance’s new design spray head comes about after years of design and testing. Fully featured with complete cable sets.

Model SRL-600
For Die Casting Machines
250 ton to 650 ton

CALL 269-849-1000 NOW FOR MORE INFORMATION!
SRL-600 Base Unit

• Electrical Interface Voltage
  Customer to specify when ordering ---------- 24 volt (100-0114)
  ----------110 volt (100-0115)

• Horizontal Slide Way Base
  Eases die setup and changes. Allows the reciprocator to be positioned back and is easily manually operated. 6” Travel 12” Travel 18” Travel

• Blow Off
  Provides a programmable output of high air pressure through a ½” air valve. Blows off excess moisture from die surface.

• Heat Exchanger

• Air Group Accessories
  Regulated and filtered air is a requirement for proper operation. Accessories include a ¾” air filter with auto drain and a ¾” air regulator with gauge. Piped for unregulated air for the air blow off.

• Rotary Platen Adapter
  Secures the spray system to the machine platen. Also permits the unit to be rotated 90° out of position for ease of die change.

• Positioning accuracy .020 in
• Spray sweep or travel speeds 0.50 to 80 in per sec
• Spray dwell time 0.0 to 99.0 sec
• Programmed dwell positions per program 5
• Directional changes per program 5
• User program memory storage 200 programs

Stroke Options Suggested Machine sizes
SRL-600/24 - (24” stroke) 250-400 - 24”
SRL-600/36 - (36” stroke) 350-600 - 36”
SRL-600/48 - (48” stroke) 400-650 - 48”
Description

Anti-Friction Horizontal Slide Base features 24” travel, linear motion guide with caged ball technology, motorized with an electromagnetic brake reversible motor and revolutionary roller pinion system that provides zero backlash, high rigidity, low maintenance, corrosion resistance and long life.
Anti-Friction Horizontal Base

JUNCTION BOX

CABLE TRACK

LM GUIDE WITH CAGED BALL TECHNOLOGY

ALUMINIUM COVER PANELS

ELECTROMAGNETIC BRAKE
REVERSIBLE MOTOR

HEAT RESISTANT WAY COVER

PRECISION ROLLER PINION SYSTEM

The World of Automation and Consumables Solutions
Description

Remotely operated electric device for moving sprayer from a vertical to a horizontal position for die changes. It comes with a 24” travel, anti-friction, motorized horizontal slide base for retracting the sprayer and easy positioning for production.

The World of Automation and Consumables Solutions
Layback Feature

EXTENDED POSITION

RETRACTED POSITION

PRODUCTION POSITION

MAINTENANCE POSITION

The World of Automation and Consumables Solutions
The Advance Products Model 950 Floor Mounted Reciprocating Die Spray System is designed for use on 800 to 1200 ton die casting machines. The SR-950 features a floor mounted, PLC-controlled digital servomotor drive system. The control system lets you program and store up to 500 separate spray programs for the touch screen and 200 for the MVA PC. This makes it ideal for the die casters that have short-run work. Box style manifolds let you quickly and easily change spray heads.

• State-of-the-art microprocessor-controlled circuits
• 72" stroke with speeds up to 50 inches-per-second
• Standard blow off and automatic air purge
• Maintenance free, 750-watt DC brush less servomotor
• Closed-loop resolver feedback system
• Quick and easy manifold installation
• Wide variety of “box” or “plate-style” manifolds

Model SR-950
For Die Casting Machines
800 ton to 1200 ton

CALL 616-249-1525 NOW FOR MORE INFORMATION!
Technical Specifications

Refer to the illustration below for Model 950 Dimensions.

Stroke................................................................. 72”

Speed............................................................... 50ips

Positioning Accuracy........................................ 0.050”

Spray Zones.......................................................... Two standard, two optional

Blow-off........................................................... Standard

Super Air Blast.................................................... Standard

Motor.............................................................. DC brushless servo drive and resolver

For closed-loop positioning data

Power Requirements...........................................

208, 230, 380, 440, 480 vac, 3-phase,
50-60 Hz, 20-ampere (575/600 vac, Canadian
Units

Air Requirements................................................

50 cfm — 50 to 90 psi (nominal)

Box-style manifolds let you quickly and easily change spray heads. Manifolds with up to thirty spray head locations and sixty nozzle outlets are available. A 3 X 5 manifold is shown in the illustration.

Box manifolds are very easy to remove. Simply unhook the four spray arms mounting platform latching arms, (two on each side of the manifold), and lift the manifold off the platform seats. It’s that easy! There are no air or lube lines to disconnect. Simply reverse the procedure to install a different manifold, and you’re back in production.
The ADVANCE SR-0355, is a robotic, reciprocating die spray system designed for use on 1400 to 2000 ton die casting machines. The SR-0355 features a PLC-controlled, digital servomotor drive system. The control system lets you program and store to 500 separate spray programs. This makes it ideal for the die casters that have short-run work. All programming is done on an easy to use control panel that features a touch screen.

Specifications

- Positioning accuracy: 0.020 in
- Spray sweep or travel speeds: 0.50 to 40 in per sec
- Spray dwell time: 0.0 to 99.0 sec
- Programmed dwell positions per program: 20
- Directional changes per program: 20
- Memory Storage (23 alpha numeric characters): up to 200 parts
- Powered Horizontal Base Drive: 31 in
- 4 Lube Zones: Included
- "M" function interrupt capability for slide core, etc.: Included
- Extended Vertical Spray Arm: Available

The ADVANCE SR-0355 includes a horizontal slide base which usually mounts to the fixed platen on the die cast machine. The SR-0355 is a dual drive arm mechanism. An extended sprayer arm can be purchased to accommodate larger die casting machines. Because there are many possible combinations of spray manifolds it is advisable to consult with Advance Products. ADVANCE offers a large selection of Standard Manifolds.

ADVANCE will customize manifolds for your die application.

Model SR-0355

For Aluminum & Zinc Die Casting Machines
1400 to 2000 ton

CALL 616-249-1525 NOW FOR MORE INFORMATION!
Because there are many possible combinations of spray manifolds it is advisable to consult with Advance Products to engineer a custom manifold to maximize the reciprocator’s spray effectiveness.

The following manifolds give a range of possibilities for various applications:

- Bar style manifold: dual lube zone, air blow off and super air blast.
- 22”x22” Square Picture Frame Manifold: dual lube zone, air blow off and super air blast.
- 22”x22” Square Picture Frame Manifold: all above features plus “fold out features” to spray in back of slide cores.

Technical Specifications

<table>
<thead>
<tr>
<th>Sprayer Dimensions (refer to Figure 1-1):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Width (A)</td>
</tr>
<tr>
<td>Overall Height (B)</td>
</tr>
<tr>
<td>Slide Base Length (C)</td>
</tr>
<tr>
<td>Slide Base Width (D)</td>
</tr>
<tr>
<td>Sprayer Arm (E)</td>
</tr>
<tr>
<td>Total Stroke Length</td>
</tr>
<tr>
<td>Reach below mounting surface*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motor</th>
<th>AC Brushless servo drive and resolver for closed-loop positioning data.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Requirements</td>
<td>208-230 VAC, 3-phase, 50-60 Hz, 20-ampere</td>
</tr>
<tr>
<td>Transformer Requirements (optional)</td>
<td>3 KVA, 380, 440, 480, 575, 600 VAC 50-60 Hz, 3 phase. Voltage must be specified if 208-230 is not available.</td>
</tr>
<tr>
<td>Air Requirements</td>
<td>50 cfm — 50 to 90 psi (nominal)</td>
</tr>
</tbody>
</table>

For more information refer to our Spraying Technology Brochure