Product Description

**eGate® Hot Runner System**
Patented electronically actuated Valve Gate® system that provides precise pin position and velocity control.

- a) Electric Actuator*
- b) eGate® Junction Box*
- c) Signal Line (Sensor-Signal) from eGate Control Unit to Hot Runner System
- d) Motor Power Line from eGate® Control Unit to Hot Runner System
- e) Signal Line (Encoder-Signal) from eGate® Control Unit to Hot Runner System
- f) eGate® Control Unit
- g) eGate® Pendant
- h) Signal Line (Machine-Signals) between eGate® Controller and Injection Molding Machine
- i) Patented Actuator Pin Quick Coupling*
- j) Face Plate Assembly
- k) eShop Software
  * Tool Equipment

**Operation Principle**
- ● Linear, Electric Actuator with electronically controlled open/close and motion/position profile.
- ● Variable stroke length and speed of each valve pin.
- ● High precision, individual pin position, repeatable to within 0.01 mm increments.

**Areas of Application:**
- ● Applications using Electric Injection Molding Machines in a clean room environment.
- ● Optimizing balance in multi-cavity and family molding.
- ● Optimizing surface quality of sequential or cascade injection molding.

**NOTE**
eGate® functionality requires an interface on the customers Injection Molding Machine according to Synventive specifications.
eGate® is not for use with injection molding machines having magnetic platens.
**eGate® Actuators**

**ELA4308P, ELA5708P, ELA8708P, ELA8716P**

Linear electronic Actuator with precision controlled open/close and motion/position profile. Bolted to the Actuator retainer plate.

**Technical Data**

- **Valve Gating type**: Cylindrical Gate
- **Attachment**: Quick Coupling, non anti-rotation
- **Adjustment**: High precision, individual pin position, 0.01 mm increments
- **Max. Pitch**: 650 mm
- **Max. Speed**: Application dependant
- **Max. Pressure**: 2070 bar (30,000 psi)
- **Max. Hot Runner Temperature**: 315 °C (599 °F)

**Cooling**

- **Medium**: Water
- A separate actuator retainer plate cooling circuit at a temperature of:
  - 55 °C / 131 °F is required for ELA8708 & ELA8716 actuators.
  - 26 °C / 80 °F is required for ELA4308 & ELA5708 actuators.

A bottom insulator plate (6 mm) is required if the cavity plate temperature exceeds:

- 55 °C / 131 °F is required for ELA8708 & ELA8716 actuators.
- 26 °C / 80 °F is required for ELA4308 & ELA5708 actuators.

**Dimensions**

1) Stack height including Hot Runner Manifold and Nozzle
2) Top view without motor slotted hole for motor decoupling

**Technical Data Table**

<table>
<thead>
<tr>
<th>Actuator</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
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<th>Q</th>
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<tr>
<td>ELA4308</td>
<td>77</td>
<td>55</td>
<td>75</td>
<td>95</td>
<td>62</td>
<td>31</td>
<td>26</td>
<td>15.5</td>
<td>31</td>
<td>37</td>
<td>06E</td>
<td>2</td>
<td>0.8-1.6</td>
<td>35</td>
<td>8</td>
<td>M3x12</td>
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<tr>
<td>ELA5708</td>
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<td>58</td>
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<td>75</td>
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<td>40</td>
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<td>37.5</td>
<td>37</td>
<td>06E</td>
<td>2</td>
<td>0.8-1.6</td>
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<td>8</td>
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<tr>
<td>ELA8708</td>
<td>91</td>
<td>69</td>
<td>105</td>
<td>126</td>
<td>105</td>
<td>69.34</td>
<td>65</td>
<td>17.8</td>
<td>52.5</td>
<td>45</td>
<td>09E</td>
<td>3</td>
<td>0.8-1.6</td>
<td>50</td>
<td>8</td>
<td>M6x22</td>
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<tr>
<td>ELA8716</td>
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<td>105</td>
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<td>17.8</td>
<td>52.5</td>
<td>45</td>
<td>09E</td>
<td>3.85</td>
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<td>8</td>
<td>M6x22</td>
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</table>

* 5 diameter pin is available as a special for a limited set of applications. Consult Synventive
3) Pitch Distance

<table>
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<tr>
<th>Actuator</th>
<th>“W”</th>
<th>“X”</th>
<th>“Y”</th>
<th>“Z”</th>
<th>Minimum Distance from Inlet</th>
<th>“RD” Max</th>
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<tr>
<td>ELA4308P0#</td>
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<td>ELA8708P0#</td>
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<td>90</td>
<td>150</td>
<td>100</td>
<td>750</td>
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<tr>
<td>ELA8716P0#</td>
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<td>120</td>
<td>90</td>
<td>160</td>
<td>100</td>
<td>575</td>
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</table>
eGate® Hot Runner System
Junction Box

1. Junction Box (ELAJB8A03)
The Junction Box is mounted to the hot half of the tool with two mounting brackets. The connection is used with up to 8 zones of motor power, sensor signals and encoder signal lines.

In order to ensure Actuator d-sub connectors do not interfere with other mold components, please ensure a minimum installation space according to the illustration in view one.

2. Mounting Brackets
Used to mount a Junction box to the hot half with two M10 cap screws per bracket.

The overall height varies dependant upon actuator type.

when using Actuator types:

<table>
<thead>
<tr>
<th>Actuator Type</th>
<th>H</th>
<th>Bracket</th>
</tr>
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<tbody>
<tr>
<td>ELA8708P</td>
<td>280</td>
<td>ELAJB8B01</td>
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<td>ELA5708P</td>
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<td>ELA8716P</td>
<td>260</td>
<td>ELAJB8B02</td>
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<tr>
<td>ELA4308P</td>
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</table>
eGate® IMM Interface Kit (ELAIMMCK04)
The eGate® IMM Kit is used to establish a connection between the Injection Molding Machine (IMM) and the eGate® Control Unit.

1. eGate® Face Plate Assembly
The Face Plate assembly is installed on the operator side of the injection molding machine. It represents the interface between the IMM and eGate® Control Unit.

   a) Status LED Yellow indicate IMM mode
   b) Interface Mode Switch
   c) Status LED Green indicates eGate® mode
   d) Interface Connector

   The Face Plate assembly is supplied as part of the eGate IMM Interface Kit ELAIMMCK04.

   NOTE
   The Interface Kit ELAIMMCK04 MUST be installed on the IMM BEFORE the mold trial with eGate®. Customer is responsible for coordinating this installation with electrical and/or mechanical IMM manufacturer.

2. IMM Relay Box
The IMM interface connector is a self-contained opto-isolated circuit that is interfaced to the IMM signals required to properly sequence the actuators and handle all of the safety related interlocks. All signals work on 24V.

   The IMM Relay Box is mounted inside the IMM cabinet. The signals from the IMM are wired directly to the provided terminal strip.

3. Face Plate to Relay Box Cable
The provided 5ft DB26 male-to-male cable is used to connect the Face Plate to the Relay Box.

   Standard length: 1.5 m

4. “Controller Injection Machine Interface Wiring Instructions” SVC-16-0023_EN-Rev##
1. **eGate® Control Unit**
The eGate® Control Unit can be used with up to 8 control zones.

**Technical Data**
- **Power**: 120 / 240 VAC
  1 Phase / N / PE
  (+/- 10 %)
  50/60 Hz
  10.0 - 4.1 A max
- **Temperature**: 0 – 43 °C
- **Humidity**: <95%
  No condensation
- **Formfaktor**: 2 u Open Rack
  Enclosure
- **Dimension**: 90 h x 462 d x 483 w

2. **eGate® Control Unit Front and Rear Views**
Stationary screws are not intended to support the controller.

3. **Controller Ventilation Front View**
In order to ensure sufficient ventilation of the Controller please ensure a minimum installation space according to the illustration in view three.
Ensure that mold release spray and residue from plastic grinding do not come in proximity of Controller.

4. **Controller Connection Clearance Side View**

**NOTE**
Reference eGate User Documentation for detailed information regarding the Controller status indicators, I/O ports and user interface signals.
Customer supplied laptop required for initial setup and any process adjustments or changes.
1. eGate® Pendant
The Pendant enables users to set closed valve pin position on the fly without using software. The Pendant is used for homing and jogging the Actuators as well as adjusting the closed positions.

The Pendant cable is 4.0 m.

2. eGate® Pendant with Control Unit
This graphic depicts the Pendant connected to an eGate® Control Unit. (ELA08ZC01). 

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
**eGate® Controller Cable Set**

The eGate Controller Cable set is used to establish a connection between the eGate Controller and other eGate components. The cable connectors are coded with geometric designs to ensure that the correct cable is being used when connecting to the eGate controller. The designs are printed at each end of the cable and are given under the cable numbers on the right. Each cable set is designed for use with up to 8 zones.

**Cables Sets**

All cables are available in 4.6 m (standard) and 7.6 m lengths (optional).

- Length 4.6 m: ELACONCS07
- Length 7.6 m: ELACONCS08

**1. Motor Power Cable**

The Connection cable is used to establish power to the Actuators.

Connections
- Hot Runner Junction Box
- eGate Control Unit

**2. Sensor Signalkabel**

This cable is used to establish a sensor signal to Actuators.

Connections
- Hot Runner Junction Box
- eGate Control Unit

**3. Encoder Signal Cable**

The Encoder Signal Cable establishes the sensor signal to the Actuators.

Connections
- eGate® Control Unit
- Hot Runner Junction Box

**4. IMM Connector Cable**

The IMM cable establishes a connection with the Injection Molding Machine.

Connections
- Injection Moulding Machine Interface
- eGate® Control Unit

**NOTE**

Cables NOT sold individually.
Zusätzlich erforderliche Kabel

1. USB Kabel (CPS--Q364-ND)
The USB cable connects the customer supplied laptop to the eGate® Controller.

One USB cable is required to support up to 64 zones.

Standard Cable Length: 4,5 m

2. Ethernet Cable (AE9969-ND)
10/100 Ethernet cable is used to establish a connection between a customer supplied laptop with eShop Software and the customers network. One Ethernet cable is required for each 8 zone Controller. Ethernet Hub supplied by customer as required.

Standard Cable Length: 1,5 m

3. Daisy-chain Cable (CHD444MM-2.5)
Connection cable to establish a connection for up to eight eGate® Control Units.

Standard Length 0.7 m
A network daisy chain scheme is used to link multiple eGate® control units.

A total of eight eGate® Control Units can be linked together via this interface. The Pendant is plugged into the front panel of any Controller in the stack.

The Pendant’s signals are shared by all eight systems via the rear network daisy chain connection on the back of the control units.
**IMM Interface Tester (ELAIMMTK01)**
The eGate® IMM Interface Tester Kit is used to check the Injection Molding Machine Interface prior to the installation of the eGate® Systems. These signals must be tested prior to Mold Trials.

**eGate® IMM Interface Tester**
The eGate® IMM Interface Tester is used to confirm that the wiring of the implemented interface is correct and all signals are working. Contact Synventive Customer Service for information regarding the tester.

### Connections

1. Emergency Stop
2. Restart
3. Safety Gates
4. Mold Closed
5. Temperature Set Point
6. Screw Forward 1
7. Screw Forward 2 for two shot and co-injection applications.
8. Screw Forward 3 for three shot applications.
9. Error Signal Output
10. Injection Inhibit Output
11. Set Mode Switch Up
12. LED Test Switch DOWN

### Anschlüsse

eGate® IMM Interface Tester
eGate® IMM Connector Cable*
eGate® IMM Face Plate Connector

**Face Plate Assembly**
Interface between IMM and eGate® Control Unit.
eGate® Controller Kit

A Controller Kit Part Number is used on Synventive Sales Orders. The part number for the 8-zone controller kit is ELA08ZCK-S01, and automatically includes:
1) Pendant (ELACHP01)
2) 8-Zone Controller (ELA08ZC01)
3) 4.5 m Cable set (ELACONCS07)
4) USB Cable (Q364-ND)
5) Ethernet Cable (AE9969-ND)

The part number is for an 8-zone controller, that includes a 7.6 m long Cable Set, is ELA08ZCK-L01.

Controllers can only be supplied in 8-zone increments. Any system having more than 8 nozzles, will require multiple controllers. Standard kit part numbers have been set up accordingly.

A good example would be a 32-zone controller kit part number ELA32ZCK01-S01, that includes:

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Pendant (ELACHP01)</td>
<td>1</td>
</tr>
<tr>
<td>2)</td>
<td>8-Zone Controllers (ELA08ZC01)</td>
<td>4</td>
</tr>
<tr>
<td>3)</td>
<td>4.5 m Cable Sets (ELACONCS07)</td>
<td>4</td>
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<tr>
<td>4)</td>
<td>USB Cable (Q364-ND)</td>
<td>1</td>
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<td>5)</td>
<td>Ethernet Cables (AE9969-ND)</td>
<td>4</td>
</tr>
<tr>
<td>6)</td>
<td>Daisy-chain Cables (CHD44MM - 2.5)</td>
<td>3</td>
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</tbody>
</table>

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.