OPTIONALS for SUPER COOL (at extra cost)
1. Cooling Water Detector (Flow & Rate) for Core Pin Cooling Circuit
2. Cooling Water Demineralizer with Reservoir
3. Cooling Water Detector (Flow & Rate) for Die & Mold Cooling Circuit for Maintenance purpose
4. Ultrasonic uneven wall thickness checker for a Cooling Core Pin
5. Set of a Cooling Core Pin and Inner Tube to suit

Specifications
(1) Water intake pressure: 0.5 to 3kg/cm² (0.05 to 0.3 Mpa)
(2) Air pressure: 4 to 6kg/cm² (0.4 to 0.6 Mpa)
(3) Core pin internal cooling water pressure: 10 to 12kg/cm² (1.0 to 1.2 Mpa)
(4) Performance of Super Cool Equipment

<table>
<thead>
<tr>
<th>Type</th>
<th>Pump capacity</th>
<th>Pump spec's</th>
<th>Number of cooling core pin</th>
<th>Number of Control system</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC-I</td>
<td>10L/min</td>
<td>Continuous</td>
<td>Less than 10 pcs</td>
<td>1/2 systems are available</td>
</tr>
<tr>
<td>SC-II</td>
<td>40L/min</td>
<td>Reciprocation</td>
<td>Less than 33 pcs</td>
<td>2(3~4 systems are available)</td>
</tr>
<tr>
<td>SC-IV</td>
<td>80L/min</td>
<td>Reciprocation</td>
<td>Less than 66 pcs</td>
<td>4(5~6 systems are available)</td>
</tr>
</tbody>
</table>

Number of cooling core pins depend on inner diameter.
Example: The condition of the above mentioned core pin number.
Inner diameter of core pin and small hole at cavity is ø3~4mm.
Inner diameter of cooling water pipe is ø1.45

(5) Working voltage: 100V (Standard)
SUPER COOL SYSTEM
COOLING EQUIPMENT FOR SMALL DIECAST CORES AND RIBS
The SUPER COOL SYSTEM has been developed to provide effective cooling in very small cores and fins in diecast parts. By drilling a small hole in the core pin or rib and inserting a small SS bubbler pressurized cooling water can be supplied for a pre-determined time and followed by air purging to expel water left inside. This insures that the bubbler remains free of contaminants. Cooling these areas will improve Casting Quality, improve core life and reduce down time.

FEATURES OF THE SUPER COOL SYSTEM
Supplies pressurized water continuously or pulsed by cycling with an air pump. Using the sequencer offers easy set up of pre-determined cycle time for each application. The small footprint of the Unit enables its installation to be made close to the die cast machine. The Unit is built using rust proofed components to insure long life and minimal maintenance.

◆ Function
(1) System Outline

Diecast Machine
Super Cool System

Casting Start

Cooling water delay time
Cooling water supply time
Air purging time
1-cycle over

Each System

Manifold
Core Pin

(2) Cooling Core Pin Size (d:mm)
Minimum size: 0.0, 2.8 ID 1.8 Spot water pipe 0.6 1.6 ID 0.7
Maximum size: 0.0, 12 ID 8.0 Spot water pipe 0.6 4.0 ID 3.0

Cycle Time Chart of 4 Control Cooling System (Ex. Die-Cast)

<table>
<thead>
<tr>
<th>Injection/low (h:mg)</th>
<th>Time (second)</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling water delay</td>
<td>1 control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>injection start</td>
<td>1 cycle of cooling Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(6) Chilled layer photo
(7) Core pin appearance photo

Typical advantages for Aluminum Die Casting offered by this System:
1. Extended life time of a core pin
   With our Super Cool System applied to Die Casting Mold(s) with water cooled core pin(s) and/or thin wall portion(s), burning defect minimized which has been typical with conventional design of no water cooling from inside. Such gives longer life time of core pin(s) and/or thin wall portion(s) and enables maximized numbers of continuous shots with no maintenance. Life time of a core pin with this system being estimated as 5 to 10 times longer than the conventional ones.
2. Improved Quality (Leakage, Shrinkage Porosity)
   Burning and/or blooming of the critical portion of a core pin and/or the die and mold being eliminated, and as the result of sufficient cooling effect to the critical part(s) optimum chilled layer structure being generated at the surface of a die casting product.
   This, at the same time, minimizes the generation of shrinkage porosity at the thin portion neighboring to the cooled area. Consequently, leakage defects and also after machining defects, such as NG often observed for threading due to porosity, can be minimized.
3. Saving in Die Lubricant
   Cooling from inside applied to core pin(s) and/or critical thin wall portion(s) of a Die and Mold enables to save spray time and frequency of the Lubricant to the related portion(s) of a Mold.
   Further, such enables introduction of the micro powder type Lubricant.
4. Improvement in Cycle Time
   Introducing Super Cool System with above mentioned improvements, i.e. less spray time and frequency of Lubricant and also the following air blow cycle, enables considerable reduction in total cycle time.
5. Reduced taper on a core pin O.D. and/or thin wall(s) of a die and mold
   With applying Super Cool System to core pin(s) or critical thin wall portion(s), due to the various advantages mentioned above, existing taper can be made almost to less than a half, which is promised for those to remove them from the casting product.
   As the result, near net shape casting becomes available, which will reduce following machining process considerably, such as tapping, and offers remarkable saving in machining cost and equipment investment cost.

◆ Example of effect using this equipment: (Diecast)

(1) Core Pin Life
(2) Maintenance Cycle
(3) Die Maintenance Man-hour
(4) Quality Defect

1. The specifications, illustrations and/or descriptions indicated in this catalog are subject to changes without previous notice, due to improvement.
2. Before starting operation of the Super Cool system, you are requested to read through carefully the related manual(s) and follow the instructions and warnings stipulated therein.