Whenever the highest levels of motion control performance and design flexibility are required, you’ll find Moog expertise at work. Through collaboration, creativity and world-class technological solutions, we help you overcome your toughest engineering obstacles. Enhance your machine’s performance, achieve greater efficiencies and help take your thinking further than you ever thought possible.
INTRODUCTION

Moog C050-1086 Hydraulic Service Manifold (HSM) provides an effective hydraulic engagement and isolation control to a test system or individual hydraulic actuators. Typically the HSM inlet ports are connected to a central Hydraulic Power Unit (HPU). The outlet ports are connected to servo hydraulic systems or actuators. C050-1086 is designed to be working under 21 MPa system pressure and the maximum rated flow capacity is 1200 l/min (300 gpm).

The HSM can provide Off/Low/High controlled hydraulic pressurization to the test system thus to establish a smooth hydraulic engagement to avoid possible impulse to the test system or damage to the specimen.

Moog offers the C050-1086 HSM in two designs:

- C050-1086A: for regular 21 MPa system, pilot pressure always present without control
- C050-1086A1: for 21 MPa system with additional TÜV certificated safety relief valve to be compliant with CE regulation; pilot pressure with On/Off solenoid control

The HSM also provides additional filtration and has accumulators for removing pressure and flow fluctuation and also providing extra flow during a peak demanding.

Due to its 1200 l/min (300 gpm) rated flow, C050-1086 HSM is typically integrated into large test system such as:

- Moog Hydraulic Simulation Table
- Moog 4 Poster Tire-Coupled Road Simulator
- Large Flow Multiple Axis Testing System

OVERVIEW

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C050-1086A - Conventional HSM model</td>
<td>Covers mainly North America and Asia Pacific region - wider acceptance Without additional safety relief valve - cost saving Pilot Pressure presents all the time - the pilot stage of a servo valve to be engaged prior to the system engagement. Better servo control.</td>
</tr>
<tr>
<td>C050-1086A1 - “Safety” HSM model</td>
<td>With additional TÜV “Safety Relief Valve” - compliant with European regulations. HSM to be categorized as “Safety Component”. Additional Pilot Control is designed - user can cut off the pilot line during a E-STOP</td>
</tr>
<tr>
<td>“Off/Low/High” pressure control</td>
<td>Low pressure (adjustable) provides a “Safe-Mode” during system installation, commissioning and tuning. Then the High pressure mode to provide the full power to the normal test and operation.</td>
</tr>
<tr>
<td>“Soft-Start” of “Off-to-Low”: 3 to 5 seconds transition time from “Low-to-High” pressure;</td>
<td>The “Soft-Start” will create a smooth engagement of the hydraulic power into an actuator’s close loop control. This is especially critical to those test applications where test specimen are sensitive and fragile and the test only utilizes a small percentage of the maximum output force of an actuator. Eliminating the jerk and impact will protect the specimen from being damaged and achieve more accurate test results. The wide range of Low Pressure setting (3.5 to 7 MPa) will create a 3 to 5 seconds transition time from “Low-to-High”, and allows the user to select a nice working point to take a balance between safety and the tuning accuracy.</td>
</tr>
</tbody>
</table>
### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Rapid “Pressure-Unloading” when switching to “Off” mode.</th>
<th>Quickly remove any pressure from actuator(s). This will bring the system from a “Pressurized-Mode” down to a “Safe-Mode” as soon as possible.</th>
</tr>
</thead>
</table>
| 1-in/1-out or 1-in/2-out options | To adapt to wider applications, such as:  
* Hydraulic Simulation Table: 1-in/1-out  
* Tire-Coupled Road Simulator: 1-in/2-out  
* Multiple Axis Test Systems: both used |
| 20 µm filter for pressure line 3 µm filter for pilot line | Minimize and eliminate possible contaminations introduced from HPU or piping lines. |
| Accumulator Certification to meet various regulations | Accumulator Certification of US, EU and China available. |
| Pilot Pressure (PP) and Shut-Off control as an addition | Pilot Pressure to provide an “earlier engagement” for devices like: servo valve with pilot stage, hydrostatic bearing etc., to ensure proper servo control from open-loop to close-loop.  
C050-1086A1 has an additional Solenoid valve to provide an ON/OFF control to the Pilot Pressure - to be compliant to the European regulation. |
| Solenoid Valve with 24 VDC 1 A maximum | Safety and high adaptability to controller |

**Typical Applications:**

With its large flow capability, the C050-1086 HSM is mainly used in large Test Systems:

- Hydraulic Simulation System - HST
- Tire-Coupled Road Simulator - 4 Poster
- Large Multiple Axis Test Systems
# HSM Specifications

<table>
<thead>
<tr>
<th>Items and Models</th>
<th>(Unit)</th>
<th>C050-1086A</th>
<th>C050-1086A1</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>Number of Station</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
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<tr>
<td>Nominal Flow Rating</td>
<td>(l/min)</td>
<td>1200</td>
<td>1200</td>
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<tr>
<td></td>
<td>(gpm)</td>
<td>300</td>
<td>300</td>
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</tr>
<tr>
<td>Operating Pressure</td>
<td>(MPa/psi)</td>
<td>21/3000</td>
<td>21/3000</td>
<td></td>
</tr>
<tr>
<td>Low Pressure Setting Range</td>
<td>(MPa/psi)</td>
<td>7/1000</td>
<td>7/1000</td>
<td>Factory Setting</td>
</tr>
<tr>
<td>Additional Safety</td>
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<tr>
<td>Safety Relief Valve</td>
<td></td>
<td>No</td>
<td>Yes @240 bar</td>
<td>Factory fixed</td>
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<tr>
<td>Solenoid Control</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Low Pressure Control</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>High Pressure Control</td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Pilot Pressure Control</td>
<td></td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Solenoid Power Volt</td>
<td>(VDC)</td>
<td>24</td>
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<td>Solenoid Current (Max)</td>
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<td>1</td>
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<tr>
<td>Filtration</td>
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<tr>
<td>Pressure</td>
<td>(µm)</td>
<td>20</td>
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<tr>
<td>Pilot</td>
<td>(µm)</td>
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<td>Accumulation</td>
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<tr>
<td>Pressure Line</td>
<td>(l)</td>
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<td>4</td>
<td>Factory Setting</td>
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<tr>
<td></td>
<td>(MPa)</td>
<td>12.5</td>
<td>12.5</td>
<td>Factory Setting</td>
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<tr>
<td>Return Line</td>
<td>(l)</td>
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<td>Factory Setting</td>
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<td></td>
<td>(MPa)</td>
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<td>0.35</td>
<td>Factory Setting</td>
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<tr>
<td>Pilot Line</td>
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<td>0.5</td>
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<td></td>
<td>(MPa)</td>
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<td>Hydraulic Connections - Inlet</td>
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<td>HPU Inlet Port</td>
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<td>2&quot; Code 61</td>
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<tr>
<td>HPU Return Port</td>
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<td>2&quot; Code 61</td>
<td>2&quot; Code 61</td>
<td></td>
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<tr>
<td>HPU Drain Port</td>
<td>SAE-8, O-LOK, tube end Run Tee</td>
<td>SAE-8, O-LOK, tube end Run Tee</td>
<td>Selectable</td>
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</tr>
<tr>
<td></td>
<td>SAE-8, JIC 37°, tube end Run Tee</td>
<td>SAE-8, JIC 37°, tube end Run Tee</td>
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<tr>
<td>Hydraulic Connections - Outlet</td>
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<tr>
<td>Ports Qty</td>
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<td>2</td>
<td>2</td>
<td>1 port can be capped</td>
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<tr>
<td>Pressure Outlet</td>
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<td>2&quot; Code 61</td>
<td>2&quot; Code 61</td>
<td></td>
</tr>
<tr>
<td>Return Outlet</td>
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<td>2&quot; Code 61</td>
<td>2&quot; Code 61</td>
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<tr>
<td>Drain Outlet</td>
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<td>SAE-8, O-LOK, tube end Run Tee</td>
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<tr>
<td></td>
<td>SAE-8, JIC-37, tube end Run Tee</td>
<td>SAE-8, JIC-37, tube end Run Tee</td>
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</tr>
<tr>
<td>Dimensions and Weight</td>
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<tr>
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<tr>
<td>Weight</td>
<td>(kg)</td>
<td>540</td>
<td>577</td>
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</tbody>
</table>
ABOUT MOOG

Hydraulic solutions
Since Bill Moog invented the first commercially viable servo valve in 1951, Moog has set the standard for world-class hydraulic technology. Today, Moog products are used in a variety of applications - providing high power, enhanced productivity and ever better performance for some of the world’s most demanding applications.

Electric solutions
Clean operation, low noise generation, less maintenance and reduced power consumption make Moog electric solutions ideal for applications worldwide. Moog is the ideal partner for applications where transitioning technologies requires special expertise.

Hybrid solutions
By incorporating the advantages of existing hydraulic and electric technologies - including modular flexibility, increased efficiency and cleanliness – into innovative hybrid solutions, Moog offers new performance potential in specialized applications.

Moog Global Support
Moog Global Support is our promise to offer world-class Repair and Maintenance Services delivered expertly by our trained technicians. With facilities around the world, Moog offers you service and expertise you can count on to keep your equipment operating as it should.

This promise offers many benefits to our customers including:

• Reduce your downtime by keeping critical machines running in peak performance
• Protect your investment by ensuring reliability, versatility and long-life of products
• Better plan your maintenance activities and make systematic upgrades
• Leverage our flexible programs to meet the unique service requirements of your facility

Look to Moog for global support including:

• Repair services using OEM parts are performed by trained technicians to the latest specifications
• Stock management of spare parts and products to prevent unplanned downtime

• Flexible programs, tailored to your needs such as upgrades, preventative maintenance and annual/multi-year contracts
• On-site services bring the expertise to you, providing quicker commissioning, set-up and diagnostics
• Access to reliable services that are guaranteed to offer consistent quality anywhere in the world

For more information on Moog Global Support visit www.moog.com/industrial/service.

Moog Hydraulic Service Manifold
Moog engineers are always ready to meet your unique application needs with building blocks or complete turnkey systems that include hydraulic or electric test actuators, Moog servo valves, hydraulic service manifolds, test controllers, software and more.

**Test Controllers and Software**

The Moog Test Controller is a real-time modular control system that can control or collect data from any hydraulic or electromechanical test system. The robust and compact modules have a wide range of transducer inputs and control outputs that can be easily configured for optimum use. The Moog test software allows the end user to control and record all of these signals in an easy to use format providing maximum value for many years of reliable usage.
Moog Servo Valves

Because we design our renowned Moog Servo Valves - the world standard in performance and durability - you’re assured of a system tailored to your exacting requirements.

Hydrostatic Bearing Test Actuator

Used in the Standard Hydraulic Simulation Table

• Innovative 8 pocket hydrostatic bearing increases side load capacity to 60% of stall output and reduces energy requirements
• Higher level of dynamic performance, reliability, and longevity
• Advanced coating used on the rod significantly improves seal wear for long life and less maintenance
• Fully integrated manifold eliminates the need for any external piping

C086A3 Single Ended Actuator

The Moog Single-Ended Hydraulic Test Actuator delivers higher reliability, less maintenance and cost-effective performance to meet critical needs of test engineers. A wide array of sizes and variety of options of features are available providing a high adaptability to users’ need.

Polymer Bearing Actuator

Fatigue rated actuators are the heart of high performance test systems. For years, test engineers have been looking for actuators that deliver dependability, less maintenance and high performance, yet are available at an affordable price.
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