

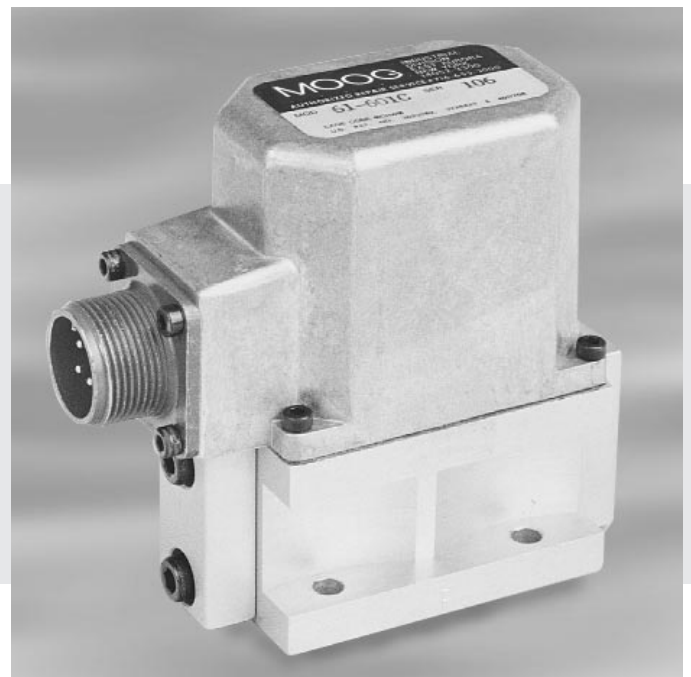
MOOG

61-600 Series Installation and Operation Instruction

Electrohydraulic Servovalve

1. INTRODUCTION

This manual provides instructions and procedures necessary to install, operate and troubleshoot the Moog Inc. Series 61-600 Industrial Servovalve.



2. OPERATION

The Moog Controls 61-600 Series Electrohydraulic Servovalve consists of an electrical torque motor, a nozzle-flapper stage and a supply filter. The torque motor includes coils, polepieces, magnets and an armature. The armature is supported for limited movement by a flexure tube, which also provides a fluid seal between the hydraulic and electromagnetic portions of the valve.

The flapper attaches to the center of the armature and extends down inside the flexure tube. The nozzles are located on either side of the flapper so that flapper motion varies the nozzle openings. Pressurized hydraulic fluid is supplied to each nozzle through the filter and an inlet orifice assembly. The differential pressure created by flapper motion is typically fed to the ends of a main stage spool.

CAUTION

DISASSEMBLY, MAINTENANCE OR REPAIR OTHER THAN IN ACCORDANCE WITH THE INSTRUCTIONS HEREIN, OR OTHER SPECIFIC WRITTEN DIRECTIONS FROM MOOG WILL INVALIDATE MOOG'S OBLIGATIONS UNDER ITS WARRANTY.

3. HYDRAULIC SYSTEM PREPARATION

To prolong the operational life of the servovalve and to reduce hydraulic system maintenance, it is recommended that the hydraulic fluid be kept at a cleanliness level of ISO Code 14/11 or better. The most effective filtration scheme incorporates the use of a kidney loop or "off-line" filtration as one of the major filtration components. The filter for the "off-line" filtration scheme should be a $\beta_3 \geq 75$ filter for maximum effectiveness.

4. INSTALLATION

The Moog 61-600 Series Servovalve may be mounted in any position, provided the servovalve pressure, control and return ports match the respective manifold ports. The mounting pattern and port location of the servovalve are shown in installation drawing A96394. The valve should be mounted with #10-32 x .5 inch long [M5 x 14] socket head capscrews.

Torque the screws to 80 in-lb. [7.6 N.m].

Wire mating connector for desired coil configuration and polarity. Thread connector to valve. Wire transducer according to the installation drawing, Figure 2.

5. TOOLS AND EQUIPMENT

- a. 4 mm and 6 mm Allen wrenches
- b. Torque wrenches to meet reassembly requirements
- c. AT4634-6 (No. 2-56UNC) plug and inlet orifice assembly remover

Table 1. Replacement Parts

Part Description	Qty.	Part Number
Filter Tube	1	B40414-1
Base O-Rings	4	G2139-9-15
Inlet Orifice O-Rings	2	42082-59
Plug O-Rings	2	G2139-12-15

6. GENERAL SERVICING RECOMMENDATIONS

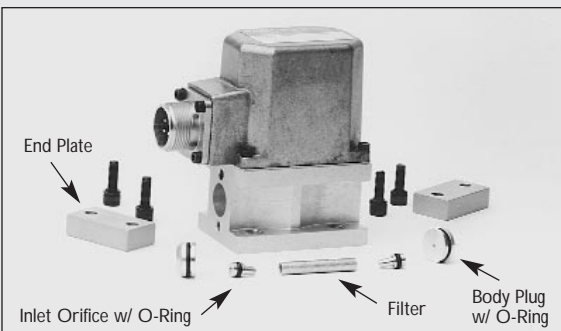
- a. On one end of the valve body, remove two socket head capscrews and lockwashers using a 6 mm Allen wrench.
- b. Remove the end plate.
- c. Repeat steps a and b on the other end of the body.
- d. Thread AT4634-6 into the plug on one end of the body. Remove the plug with O-Ring.
- e. Thread AT4634-6 into the inlet orifice assembly. Remove the inlet orifice assembly with O-Ring.
- f. Repeat steps d and e on the other end of the body.

Before any work is performed on the servovalve, this manual should be thoroughly reviewed. Adequate servicing depends upon a good understanding of the control valve assembly.

7. TROUBLESHOOTING CHART

The following troubleshooting chart lists potential troubles encountered, probable causes and remedies.

Potential Trouble	Probable Cause	Remedy
Servovalve does not follow input command signal. (Actuator or components are stationary or creeping slowly)	1. Plugged pilot valve filter. 2. Contaminated main stage.	1. Replace pilot valve filter. 2. Return to factory for service.
High threshold. (Jerky, possible oscillatory or "hunting" motion in closed loop system.)	1. Plugged pilot valve filter. 2. Contaminated main stage.	1. Replace pilot valve filter. 2. Return to factory for service.
Poor response.	Partially plugged pilot valve filter.	Replace pilot valve filter.
Valve spool hardover.	1. Contaminated pilot valve. 2. System polarity reversed.	1. Return to factory. 2. Verify system polarities.



8. FUNCTIONAL CHECKOUT AND CENTERING

- Install servovalve on hydraulic system or test fixture, but do not connect electrical lead.
- Apply required system pressure to servovalve and visually examine for evidence of external leakage. If leakage is present and cannot be rectified by replacing O-Rings, remove the discrepant component and return for repair or replacement.
- Connect electrical leads to servovalve and check phasing in accordance with system requirements.

9. AUTHORIZED REPAIR FACILITIES

If servovalve continues to malfunction after all recommended corrective action procedures are performed, defective valve should be returned to Moog for repair. Moog does not authorize any facilities other than Moog or Moog subsidiaries to repair its servovalves. It is recommended you contact Moog at (716)655-3000 to locate your closest Moog repair facility. Repair by an independent (unauthorized) repair house will result in voiding the Moog warranty and could lead to performance degradation or safety problems.

61-600 SERIES INSTALLATION AND OPERATION INSTRUCTION

NOTES

1 Fluid:

Industrial type petroleum base hydraulic fluid, maintained to ISO DIS 4406 Code 14/11 recommended.

2 Operating Temperature Range:

-4°F to 175°F (-20°C to 80°C)

3 Surface:

Surface to which valve is mounted requires $\sqrt{\text{ }}^{\text{63}}$ ($\nabla\nabla$) finish, flat within .002 [0.05] TIR.

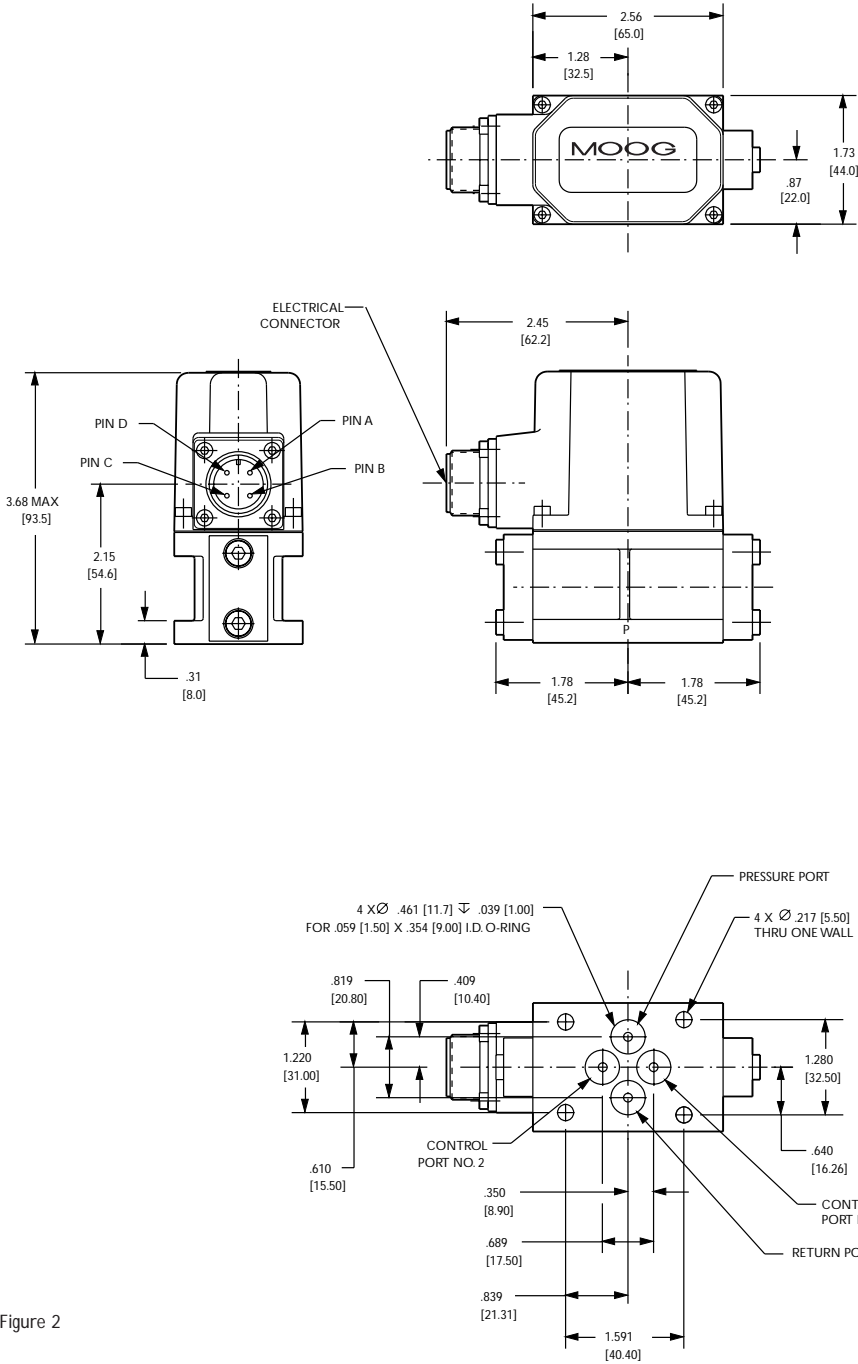
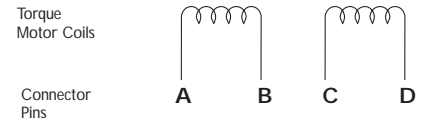


Figure 2

TYPICAL WIRING SCHEMATIC



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