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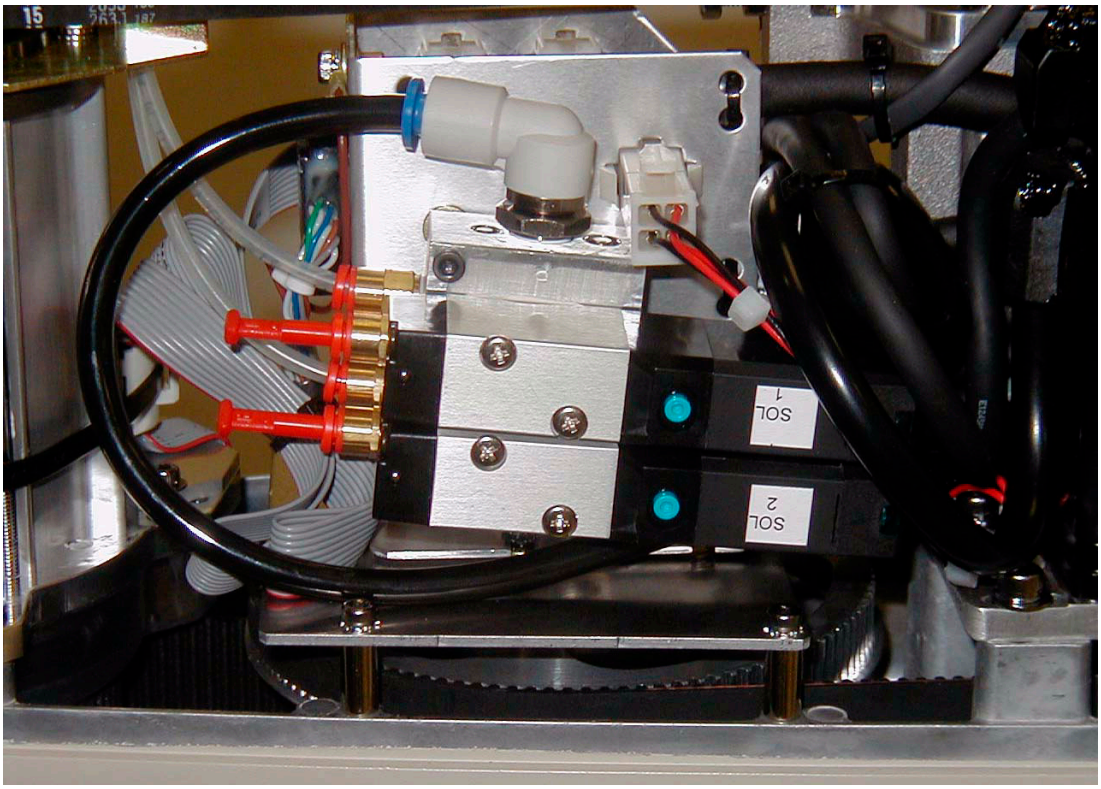
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Adept Cobra Robot
Solenoid Kit Installation Procedure
For s-series (standard and inverted), i-series, and PLC-series robots



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Robot Solenoid Kit Installation Procedure

Introduction

This procedure describes how to mount the 24 V solenoid option kit onto Adept Cobra s-series (standard and inverted), i-series, and PLC-series robots. The solenoid kit is available as Adept p/n 02853-000.

> **NOTE:** The solenoid kit option is NOT available for the IP-65 version of these robots.

The robot has been prewired to accommodate a bank of two 24 VDC solenoid valves. Power for the internal mounting is accessible via a connector mounted inside the outer link cover (see **Figure 1 on page 4**). The signals actuating the valves are directly switchable from V+ utilizing software signals 3001 and 3002. Refer to the SIGNAL command in the ***V+ Language Reference Guide*** for additional information. The Adept-supplied solenoids each draw a nominal 75 mA from 24 VDC.

The solenoid valve assembly consists of two independent valves (Valve #1 and Valve #2) on a common manifold. The manifold supplies air at the user's line pressure (28 psi (0.19 MPa) minimum to 114 psi (0.786 MPa) maximum). Each valve has two output ports, A and B. The output ports are arranged so that when Port A is pressurized, Port B is not pressurized. Conversely, when Port B is pressurized, Port A is not. In the Adept Cobra s-series robots, the air lines from Port A on each valve are plugged at the factory (at the solenoid assembly).

The Solenoid Kit is available through Adept. Contact your Adept Sales Representative for current price and availability.

Table 1. Air Pressure

Air Pressure (Psi)	Air Pressure (MPa)
28 - 114	0.19 - 0.786

Tools Required

- Assorted Allen drivers
- Cable ties
- Diagonal wire cutters
- Solenoid Valve Upgrade Kit (Adept p/n 02853-000)

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Procedure

1. Turn off all power to the robot.
2. Remove three screws on each side of the outer link cover. Remove two screws on top and remove the cover.
3. Connect the Internal Solenoid Valve Cable assembly to the Solenoid Manifold assembly, by plugging the SOL 1 connector into Valve 1 and SOL 2 into Valve 2.

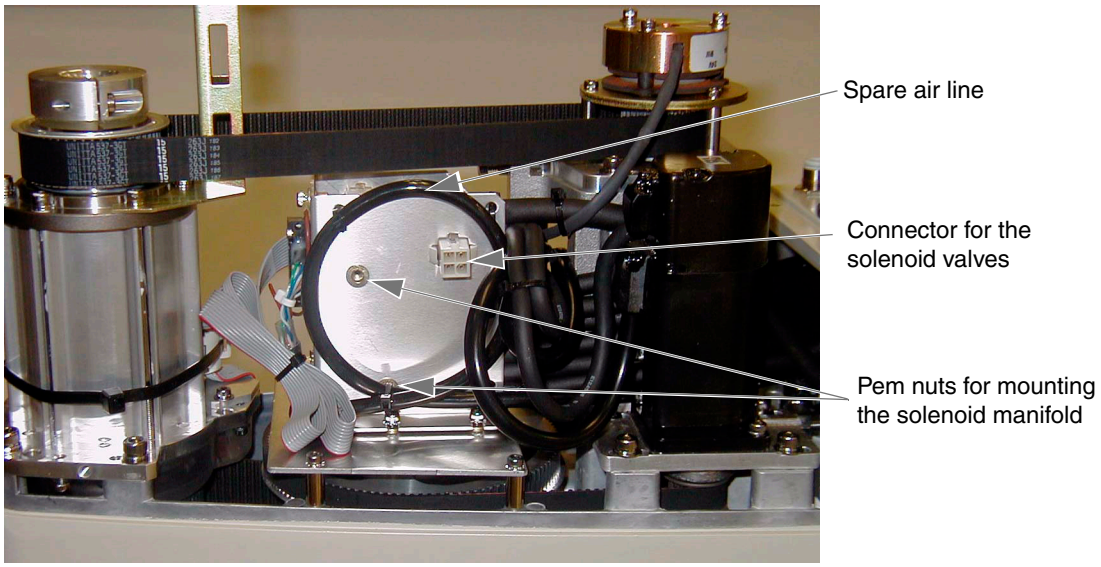


Figure 1. Solenoid Mounting Bracket with Connector and Spare Air Line

4. Cut and discard the cable ties holding the spare air line at the top of the mounting bracket. Move the air line away to facilitate the mounting of the solenoid manifold (see **Figure 1**).
5. Mount the solenoid manifold onto the bracket using the supplied M3 x 30 mm screws and washers (see **Figure 2**).
6. Insert the spare air line into the air intake coupling of the solenoid manifold. Make sure the air line is pushed in all the way and secured in place by the intake coupling. Confirm by pulling the air line.
7. Plug the connector plug into the female connector jack (marked SOLND) on the bracket.
8. Use cable ties to secure the air line to the bracket as needed.

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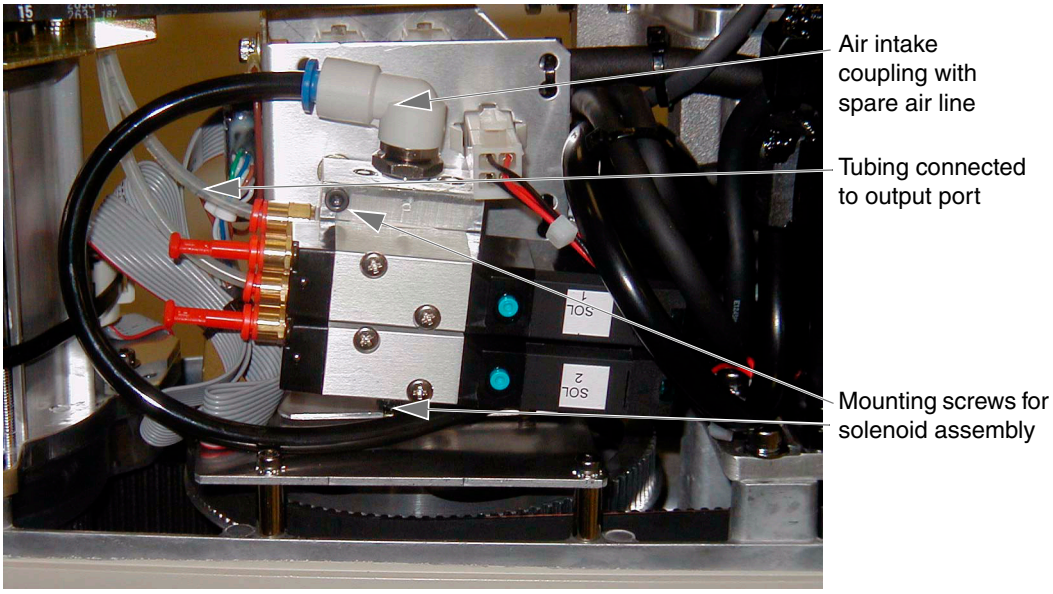


Figure 2. Solenoid Placement Using Mounting Hardware

9. Install the appropriate lengths of 5/32 inch plastic tubing (supplied) into the two output ports on the manifold.
10. Route the tubing up along the tower bracket next to the quill and down through the center of the quill.

    Use cable ties, as needed, to secure the tubing.
11. For non-inverted robots, remove the four screws from the Joint 1 cover (see **Figure 3**); for inverted robots, remove the four screws from the User Connector Panel (see **Figure 4**). Remove the cover enough so you have access to the tubing.

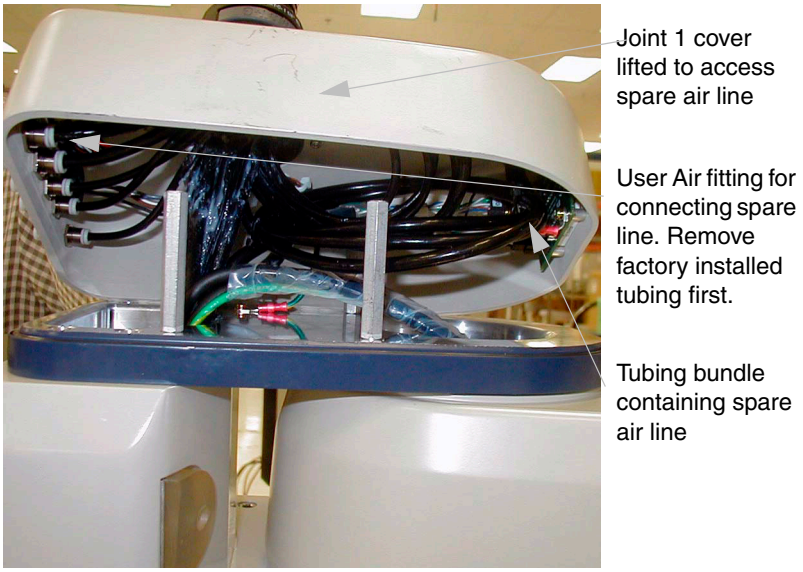


Figure 3. Connecting Spare Air Line to User Connector

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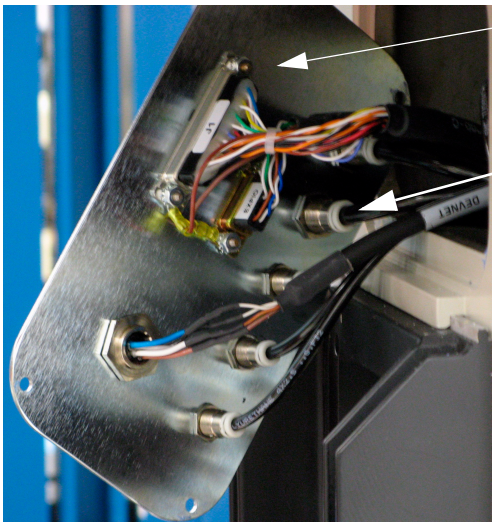


Figure 4. Connecting Spare Air Line to User Connector (Cobra s-series Inverted robot)

12. Disconnect the tubing from the 6 mm User Air fitting shown in **Figure 4**. Fold the tubing out of the way.
13. Insert the spare air line into the back of the empty 6 mm User Air fitting (**Figure 4**).

    NOTE: This 6 mm User Air connector is not available for other uses after this modification.

14. Replace the Joint 1 or User Connector Panel cover, taking care to ensure that all tubing is inside the cover and nothing gets crimped or pinched while pushing the cover into position. Replace four screws to secure the cover. Tighten the screws to 1.6 N·m (14 in-lb) of torque.
15. Replace the outer link cover and tighten the screws to 1.6 N·m (14 in-lb) of torque.
16. Connect the factory air supply to the 6 mm User Air connector.
17. Test the system.



WARNING: Disconnect robot air pressure until this test is complete to prevent unsecured pneumatic lines from accidentally injuring personnel.

Turn on system power and boot the system. Once the system boot has completed, at the V+ dot prompt, type in the following commands to activate the solenoids one at a time.

```
.Signal 3001 ↵

.Signal 3002 ↵
```

NOTE: See the *Adept Cobra PLC600/PLC800 Robot User's Guide* for the proper commands for that robot.

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