

# **DC Servo Gripper Installation Guide**

**for**

**SCORBOT-ER VII**

**SCORBOT-ER IX**

**PERFORMER-MK2**

**SCORA-ER 14**

Catalog #100077 - Rev.B

**ESHED ROBOTEC** 



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# SCORBOT-ER VII

Before you install the DC servo gripper, make sure your Controller-A contains the piggy-back board with 68020 CPU and 68881 FPU (floating point unit).

If the controller does not have these components, upgrade the EPROMs in Controller-A to Version F.44 or later.

After you have exchanged the EPROMs, you must configure the controller.

1. Turn on the computer and the controller.
2. Activate ATS.
3. Enter the command HOME and make sure the routine is successfully completed.

The robot must be in the home position for the proper installation of the gripper.

*Do not change the position of the robot after it is homed.*

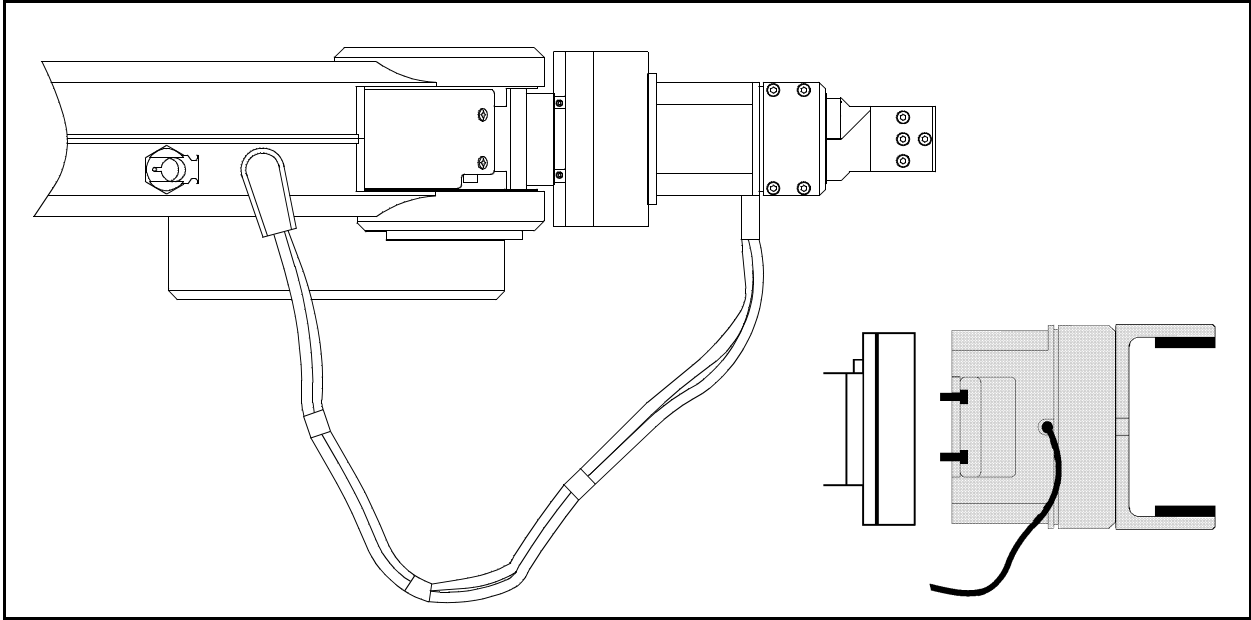
4. Turn off the controller.
5. Using four M4x10 socket screws and a 3mm Allen key (hex wrench), attach the gripper to the gripper mounting flange at the end of the robot arm, as shown in the inset in Figure 1.
6. Connect the gripper cable to the electrical connector on the robot arm. Make sure the connector is oriented as shown in Figure 1.
7. Make sure the gripper cable is positioned as shown in Figure 2.
8. Turn on the controller.

Press [Shift]+F10 to activate the ATS Backup Manager.

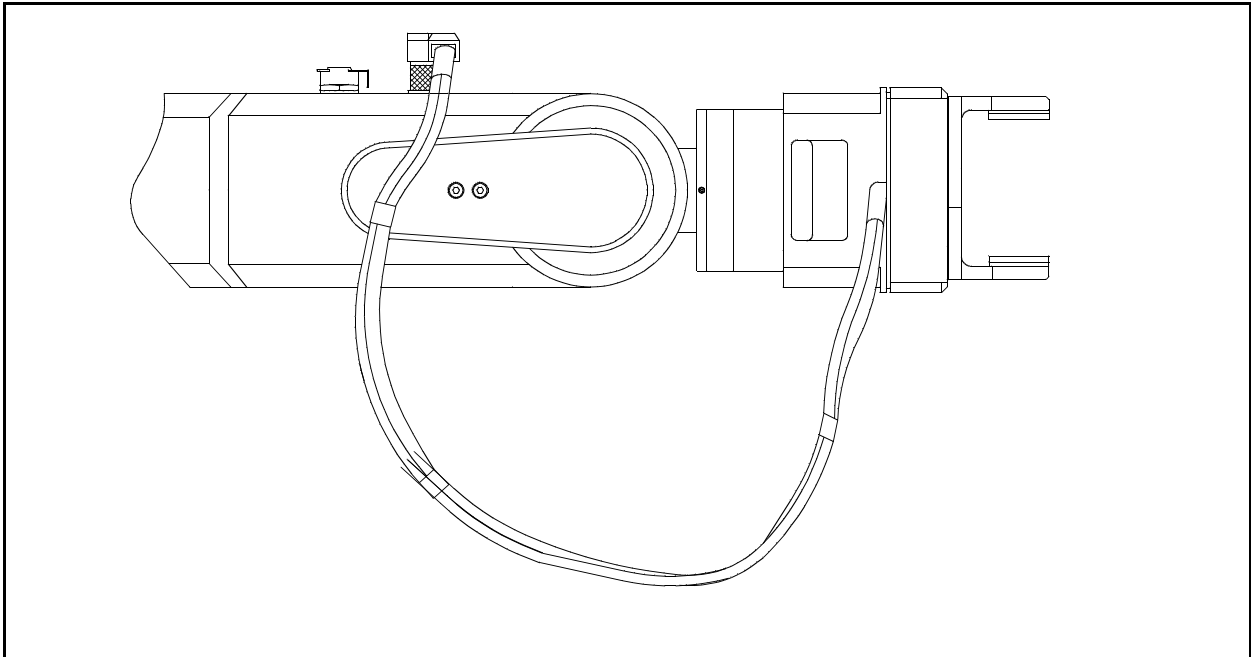
9. Load the parameter file **GRP7** from the ATS directory using the options: "Restore PARAMETERS" and "RESTORE from disk (F5)".
10. Execute the robot HOME command. If the gripper cable becomes entangled or excessively stretched during the homing, abort the procedure immediately.

*The gripper has a rotation of  $\pm 270^\circ$ . Do not attempt to move the gripper beyond this limit.*

*At the end of each work session (before turning off the controller), or before homing the robot, make sure the gripper's position is as shown in Figure 2.*



*Figure 1: Attaching Gripper to SCORBOT-ER VII*



*Figure 2: Connecting Gripper Cable to SCORBOT-ER VII*



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## SCORBOT-ER IX

Before you install the DC servo gripper, make sure the EPROMs in your Controller-B are Version 2.25 or later. Upgrade the EPROMs if necessary. Be sure to configure the controller after you have exchanged the EPROMs.

1. Turn on the computer and the controller.
2. Activate ATS.
3. Enter the command HOME and make sure the routine is successfully completed.  
*The robot must be in the home position for the proper installation of the gripper. Do not change the position of the robot after it has been homed.*
4. Turn off the controller.
5. Using four M4x10 socket screws and a 3mm Allen key (hex wrench), attach the gripper to the gripper mounting flange at the end of the robot arm, as shown in the inset in Figure 3.
6. Connect the gripper cable to the electrical connector on the robot arm. Make sure the connector is oriented as shown in Figure 3.
7. Make sure the gripper cable is positioned as shown in Figure 4.
8. Turn on the controller.
9. Press [Ctrl]+F3 to activate the ATS **Peripheral Setup** screen.

Set the robot gripper type definition to **DC Servo Gripper** and the gripper connection to **Axis 6**.

Refer to the *Controller-B User's Manual* and the *ATS for Controller-B Reference Guide* for details on installation and setup.

11. Execute the robot HOME command. If the gripper cable becomes entangled or excessively stretched during the homing, abort the procedure immediately.

If an error occurs during the homing, or if the system displays the message "Home failure axis 6," adjust system parameter 75 (see instructions below).

12. Open and close the gripper and verify that it functions properly.

From ATS, enter the ACL commands to open and close the gripper:

Type:           **open [Enter]**

Type:           **close [Enter]**

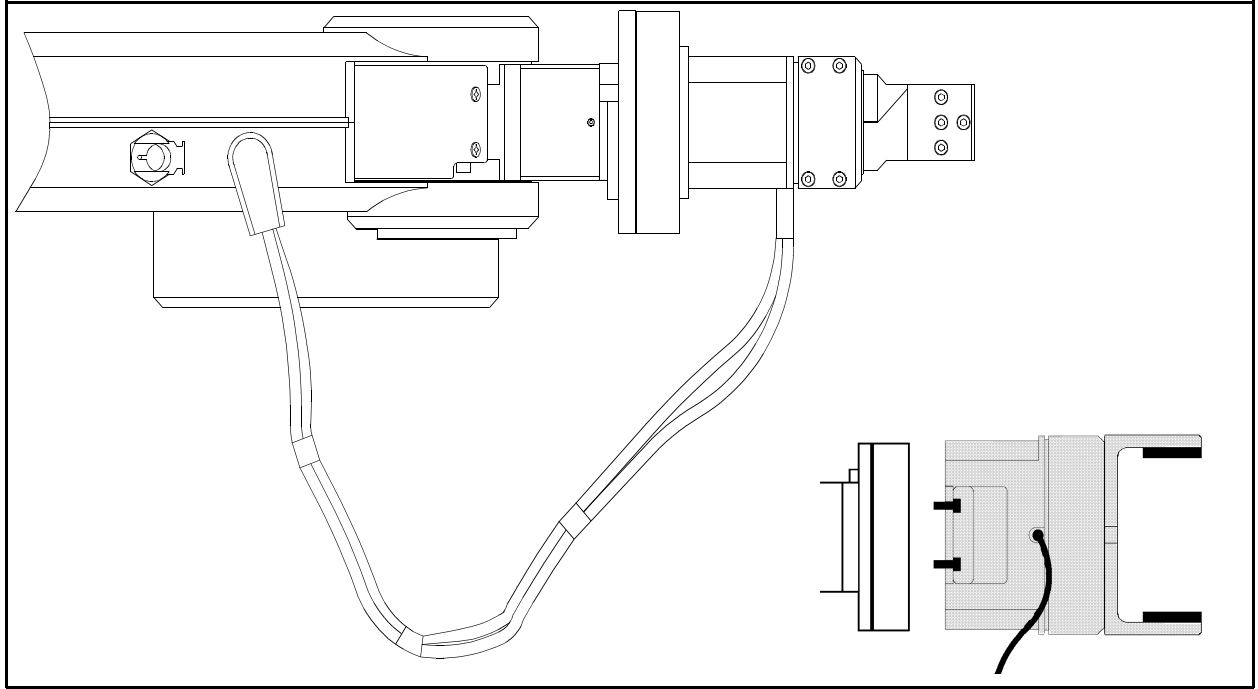


Figure 3: Attaching Gripper to SCORBOT-ER IX

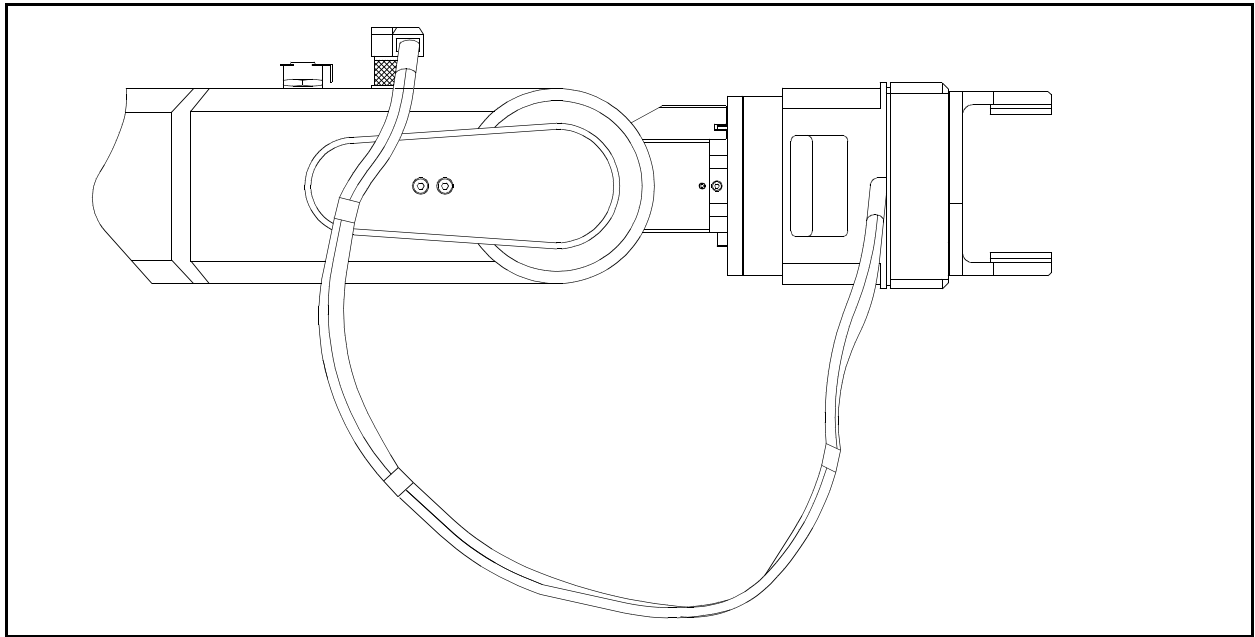


Figure 4: Connecting Gripper Cable to SCORBOT-ER IX

Or from the teach pendant, key in a few times:

### **Open/Close**

If you see that the gripper does completely close, adjust a system parameter 75 (see instructions below).

*The gripper has a rotation of  $\pm 270^\circ$ . Do not attempt to move the gripper beyond this limit.*

*At the end of each work session (before turning off the controller), or before homing the robot, make sure the gripper's position is as shown in Figure 4.*

## **Changing System Parameter 75**

Parameter 75 defines the DAC value applied to the gripper motor when opening and closing the gripper.

To improve gripper operation, increase the value of parameter 75 to **-2500**. (Default value is -2000.) Do not enter a value which exceeds -2500.

1. From ATS, enter the ACL command **PRIV ON [Enter]**.  
When prompted for the password, press **[Enter]**.
2. Enter the command **LET PAR 75 -2500 [Enter]**
3. Enter the command **INIT CONTROL [Enter]**.
4. Enter the command **PRIV OFF [Enter]**.
5. Repeat the homing routine, and again check gripper operation.



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## PERFORMER-MK2

Before you install the DC servo gripper, make sure the EPROMs in your Controller-B are Version 2.25.01 or later. Upgrade the EPROMs if necessary. Be sure to configure the controller after you have exchanged the EPROMs.

1. Turn on the computer and the controller.
2. Activate ATS.
3. Enter the command HOME and make sure the routine is successfully completed.  
*The robot must be in the home position for the proper installation of the gripper. Do not change the position of the robot after it has been homed.*
4. Turn off the controller.
5. Using four M5x10 socket screws and a 4mm Allen key (hex wrench), attach the gripper adapter plate to the flange at the end of the robot arm, as shown in Figure 5.
6. Using four M4x10 socket screws and a 3mm Allen key, attach the gripper to the adapter plate, as shown in Figure 5.
7. Gently connect the gripper cable to the D9 connector on the robot arm, as indicated in Figure 6.
8. Make sure the gripper cable is positioned as shown in Figure 6.
9. Turn on the controller.
11. Press [Ctrl]+F3 to activate the ATS **Peripheral Setup** screen.  
Set the robot gripper type definition to **DC Servo Gripper** and the gripper connection to **Axis 6**.  
*Refer to the *Controller-B User's Manual* and the *ATS for Controller-B Reference Guide* for details on installation and setup.*
12. Execute the robot HOME command. If the gripper cable becomes entangled or excessively stretched during the homing, abort the procedure immediately.  
If an error occurs during the homing, or if the system displays the message "Home failure axis 6," adjust system parameter 75 (see instructions below).
13. Open and close the gripper and verify that it functions properly.  
From ATS, enter the ACL commands to open and close the gripper.:

Type:           **open [Enter]**

Type:           **close [Enter]**

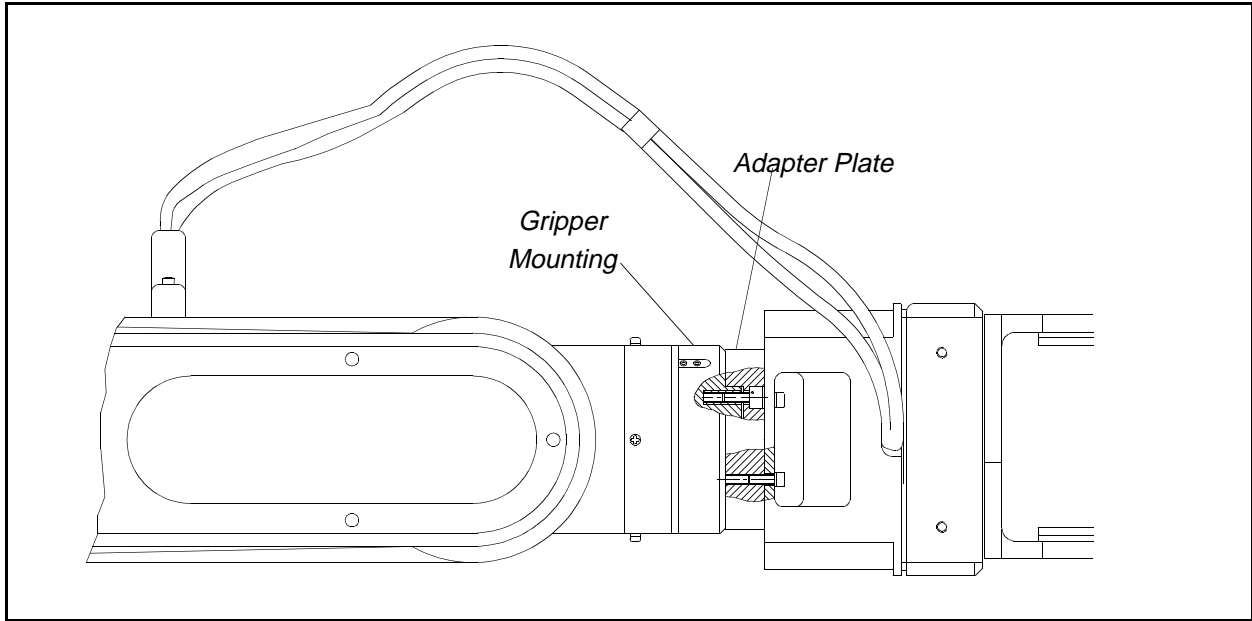


Figure 5: Attaching Gripper to PERFORMER-MK2

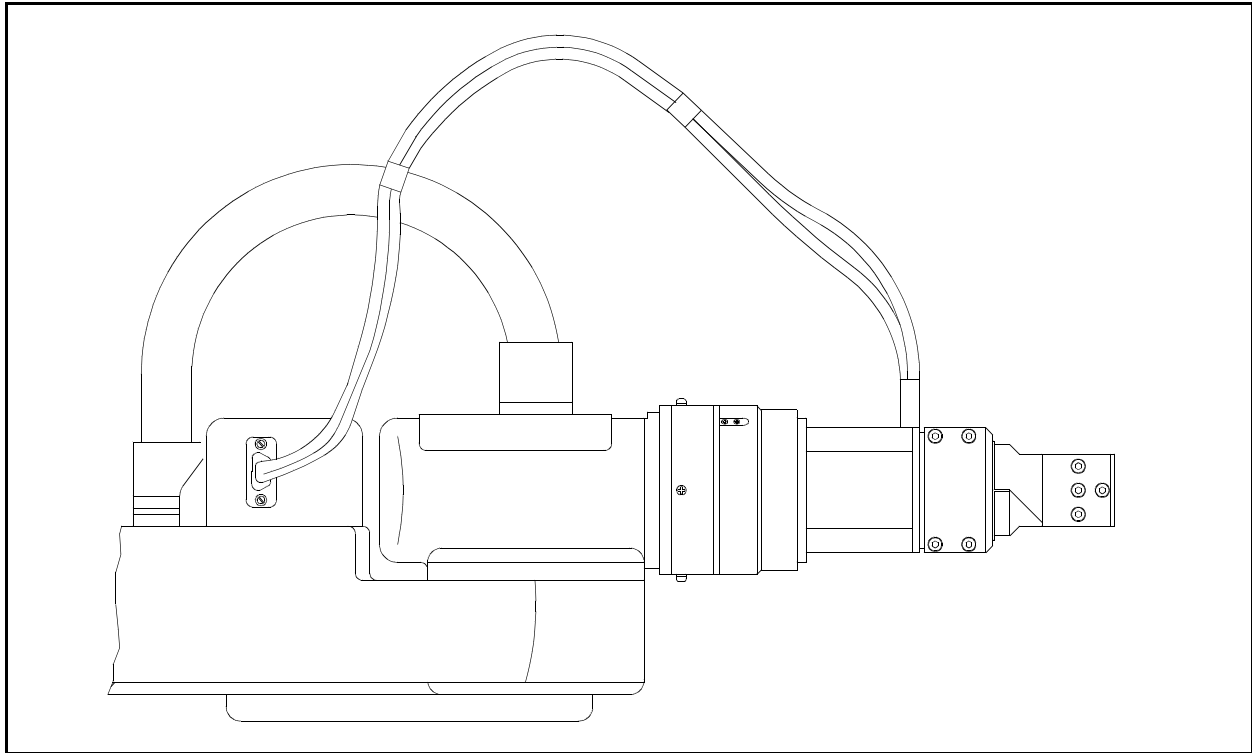


Figure 6: Connecting Gripper Cable to PERFORMER-MK2

Or from the teach pendant, key in a few times:

### **Open/Close**

If you see that the gripper does completely close, adjust a system parameter 75 (see instructions below).

*The gripper has a rotation of  $\pm 270^\circ$ . Do not attempt to move the gripper beyond this limit.*

*At the end of each work session (before turning off the controller), or before homing the robot, make sure the gripper's position is as shown in Figure 6.*

## **Changing System Parameter 75**

Parameter 75 defines the DAC value applied to the gripper motor when opening and closing the gripper.

To improve gripper operation, increase the value of parameter 75 to **-2500**. (Default value is -2000.) Do not enter a value which exceeds -2500.

1. From ATS, enter the ACL command **PRIV ON [Enter]**.  
When prompted for the password, press **[Enter]**.
2. Enter the command **LET PAR 75 -2500 [Enter]**
3. Enter the command **INIT CONTROL [Enter]**.
4. Enter the command **PRIV OFF [Enter]**.
5. Repeat the homing routine, and again check gripper operation.





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## SCORA-ER 14

Before you install the DC servo gripper, make sure the EPROMs in your Controller-B are Version 2.25 or later. Upgrade the EPROMs if necessary. Be sure to configure the controller after you have exchanged the EPROMs.

1. Turn on the computer and the controller.
2. Activate ATS.
3. Enter the command HOME and make sure the routine is successfully completed.  
*The robot must be in the home position for the proper installation of the gripper. Do not change the position of the robot after it has been homed.*
4. Turn off the controller.
5. Using four M4x10 socket screws and a 3mm Allen key (hex wrench), attach the gripper to the gripper mounting flange at the end of the robot arm, as shown in the inset in Figure 7.
6. Connect the gripper cable to the electrical connector on the robot arm. Make sure the connector is oriented as shown in Figure 7.
7. Make sure the gripper cable is positioned as shown in both Figure 7 and Figure 8.  
*Refer to A-A in Figure 7.* Fit the two cable clamps onto the two gripper cables. Place the clamps on the flange. Fit the spacer on the cable clamp screw, and then tighten the screw onto the flange.
8. Turn on the controller.
9. Press [Ctrl]+F3 to activate the ATS **Peripheral Setup** screen.  
Set the robot gripper type definition to **DC Servo Gripper** and the gripper connection to **Axis 5**.  
*Refer to the *Controller-B User's Manual* and the *ATS for Controller-B Reference Guide* for details on installation and setup.*
10. Execute the robot HOME command. If the gripper cable becomes entangled or excessively stretched during the homing, abort the procedure immediately.  
If an error occurs during the homing, or if the system displays the message "Home failure axis 6," adjust system parameter 75 (see instructions below).
11. Open and close the gripper and verify that it functions properly.  
From ATS, enter the ACL commands to open and close the gripper.:  
Type:           **open [Enter]**  
Type:           **close [Enter]**

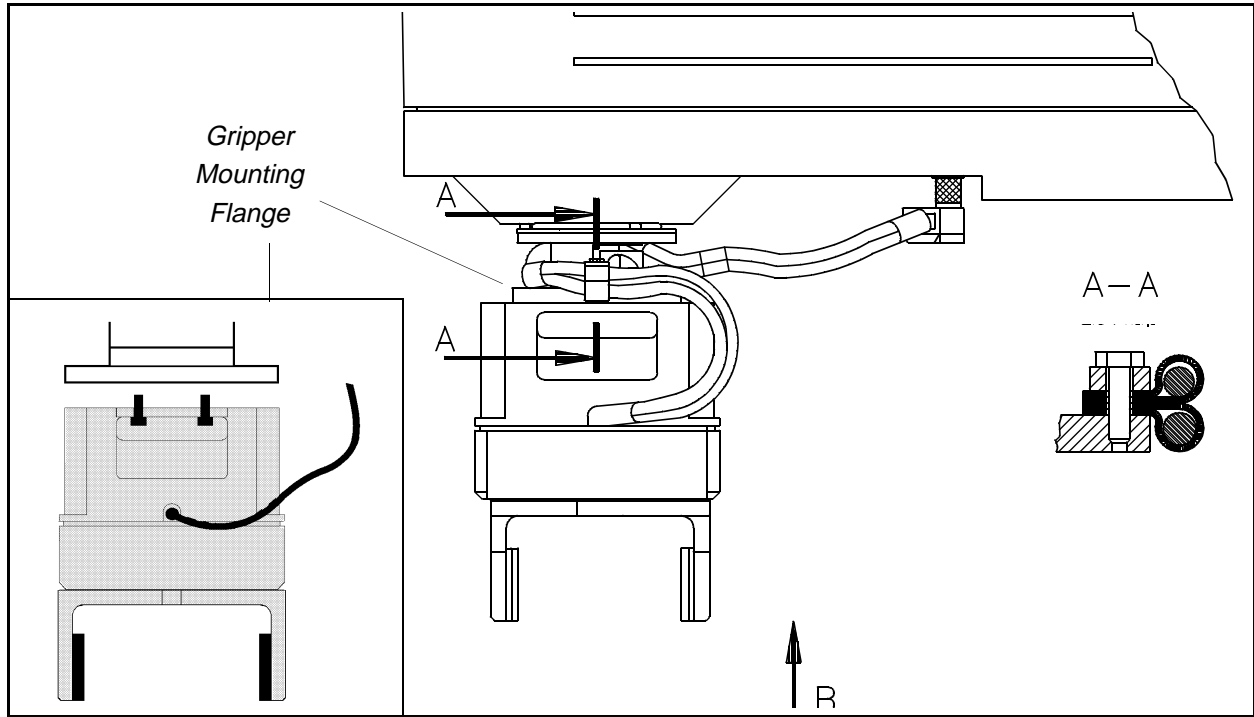


Figure 7: Attaching Gripper to SCORA-ER 14

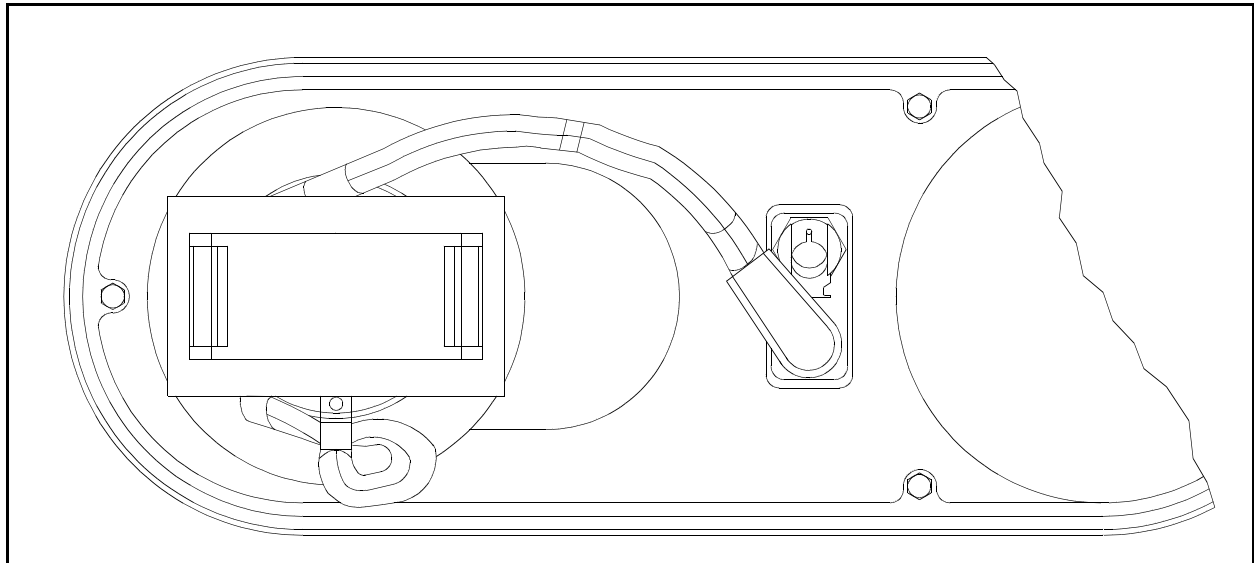


Figure 8: Connecting Gripper Cable to SCORA-ER 14

Or from the teach pendant, key in a few times:

### **Open/Close**

If you see that the gripper does completely close, adjust a system parameter 75 (see instructions below).

*The gripper has a rotation of  $\pm 270^\circ$ . Do not attempt to move the gripper beyond this limit.*

*At the end of each work session (before turning off the controller), or before homing the robot, make sure the gripper's position is as shown in Figure 8.*

## **Changing System Parameter 75**

Parameter 75 defines the DAC value applied to the gripper motor when opening and closing the gripper.

To improve gripper operation, increase the value of parameter 75 to **-2500**. (Default value is -2000.) Do not enter a value which exceeds -2500.

1. From ATS, enter the ACL command **PRIV ON [Enter]**.  
When prompted for the password, press **[Enter]**.
2. Enter the command **LET PAR 75 -2500 [Enter]**
3. Enter the command **INIT CONTROL [Enter]**.
4. Enter the command **PRIV OFF [Enter]**.
5. Repeat the homing routine, and again check gripper operation.