

# INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.

**READ INSTRUCTIONS COMPLETELY BEFORE PROCEEDING.**

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## UNITS AFFECTED

This kit and procedure applies to XLC/MVE 500/1200 and MVE 600/1400 cabinet freezers originally equipped with the MicroDynamics TEC2000 control system

## PARTS SUPPLIED

PART #	Description	QTY
13223908	PANEL BACK TEC3000 CABINET	1
13223836	PANEL FRONT TEC3000 W/TEXT	1
13281972	WIRE HARNESS TEC 3000/4000	1
11849982	CABLE INTERMEDIATE TEMP	2
13319563	WIRE HARNESS PURGE VLV ADPTR	1
13319571	WIRE HARNESS FILL VLV ADPTR	1
11943012	UPGRADE KIT 110V MDC TO JEROME	1
13319580	INSTR UPGRD MDC CAB TO TEC3000	1
13289481	MNL QK START TEC 3000 ENGLISH	1
13410156	SPACER TEC3000 CABINET UPGRADE	1
13410164	PHCSTS SS #8-32*1-1/2" TYPE F	4

## TOOLS REQUIRED

- Screw Driver Phillips #1
- Screw Driver Phillips #2
- Wire cutters
- Wire strippers
- Wire crimpers
- Adjustable wrench
- Tube cutter capable of cutting 1/8" OD tube

## GENERAL

This modification replaces the existing MicroDynamics rear control panel and front display panel with TEC3000 components.

There are two generations of the XLC/MVE 500/1200 cabinet freezers (early rounded corner and later square corner) addressed in separate sections of this document. The MVE 600/1400 cabinet models will be addressed in a third section.

## **INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

NOTE: If the freezer is equipped with a gas bypass, it will be necessary to install adapter harnesses on the valve and sensor leads to allow it to be plugged into the new main wire harness. The WIRE HARNESS FILL VLV ADPTR, P/N 13319571S is used to accomplish this. Contact Chart Customer/Technical Service at 770-257-1299 or 800-482-2473 and order two of P/N 13319571S. Install these on the leads for the bypass valve and sensor and plug them into the appropriately labeled connectors on the main wire harness.

The freezer will operate properly without the bypass until the additional harness adapters can be obtained.

### **CONVERSION PROCEDURE XLC/MVE 500/1200 FIRST GENERATION (ROUNDED CORNER CABINET)**

1. **DISCONNECT THE POWER CORD FROM THE WALL OUTLET.**
2. **SHUT OFF THE LN2 SUPPLY AND DISCONNECT THE TRANSFER HOSE FROM THE FREEZER.**
3. Remove the rear control panel from the cabinet. Reference Figure 1.
4. Disconnect 24VAC input power cable, ground leads, temperature cable, display cable, purge/fill valve harness, and tubing from the rear panel. Reference Figure 6.
5. Remove the rear cabinet panel from the cabinet.
6. Remove the front cabinet panel from the cabinet.
7. Disconnect the display cable from the back of the display panel. Reference Figure 2.
  - 7.1. The existing display cable (34 wire) will not be reused, but it should not be removed from the cabinet yet, as it will be used to pull the new cable through the cabinet.
8. Remove the display from the top panel.
9. Disconnect the temperature sensors from the receptacles, reference Figure 3.
  - 9.1. The temperature sensors will be retained, so do not discard them.
10. Remove the temperature cable receptacle end connections from the top panel. Reference Figure 3.
  - 10.1. The existing temperature cable will not be reused, but it should not be removed from the cabinet yet, as it will be used to pull the new temperature cable through the cabinet.
11. Check the required length of intermediate temperature cable from the rear to the front of the cabinet and determine whether one or two cables will be required.
  - 11.1. If two are required, connect the two cables end to end.

## **INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

If only one is required, you can return the unused cable. Contact customer/technical service for an RMA.

12. Tie the end of the new intermediate temperature cable (the receptacle end that the sensors would connect to) to the control panel end of the original temperature cable and pull it through the cabinet using the original cable.
13. Install the receptacles in the top panel. These should be labeled A and B. install in the corresponding labeled hole.
14. Install the new display in the top panel.
15. Install the new rear panel in the rear of the cabinet where the original panel was installed.
  - 15.1. The rear cabinet panel must be placed close enough to the unit for the display cable from the rear control panel to reach the front of the unit.

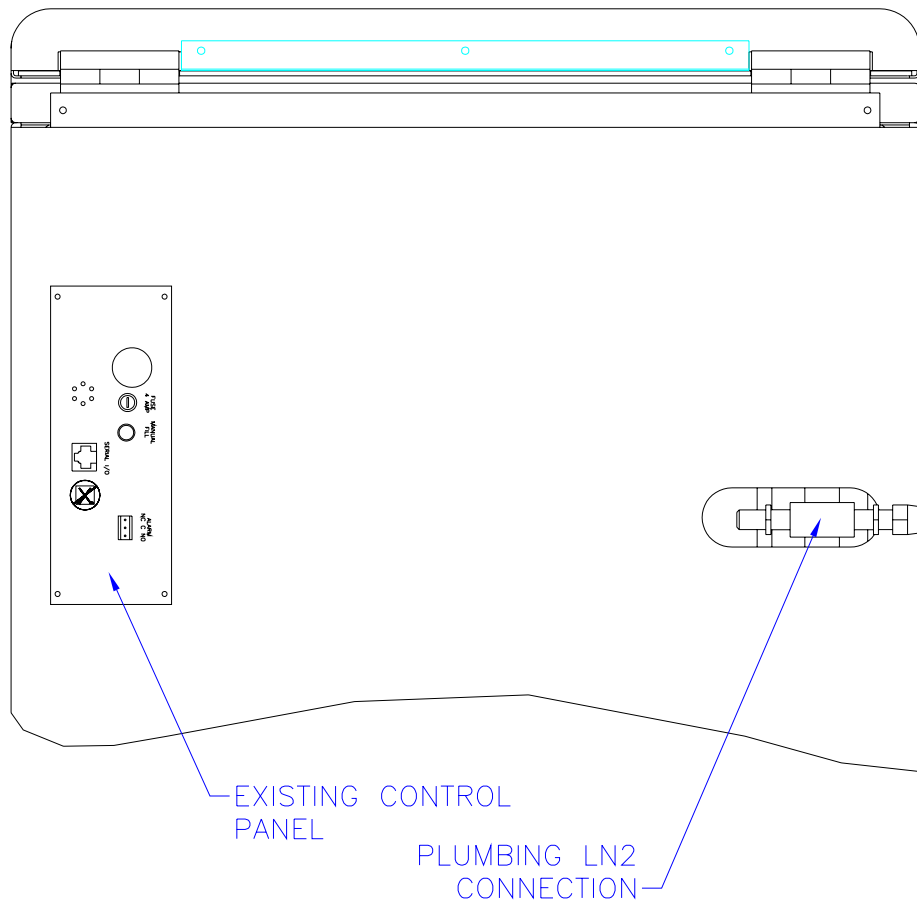
NOTE: This is cumbersome. Patience is required.

16. Tie the end of the display cable that is attached to the new rear panel (it has an RJ45 network type connection on it reference Figure 4) to the end of the original display cable and pull it through the cabinet using the original cable.
17. Connect the new display cable to the new display.
18. Connect the new intermediate temperature cable to the new rear panel at connections provided on the bottom of the panel. Reference Figure 4
19. Connect the new wire harness provided to the matching connector that is hanging from the new control panel. Reference Figure 4 and Figure 5
20. Clip the Molex connector from the end of the purge and fill valve output harness connector that was attached to the original control panel. Reference Figure 6.
21. Locate the connection on the new wire harness for the purge valve (end connectors are labeled) and tie it to the old harness leads feeding from the purge valve at the front of the freezer and pull it through to the front of the cabinet.
22. Disconnect the existing harness leads from the purge valve. Reference Figure 7.
23. Install the "WIRE HARNESS PURGE VLV ADPTR" (Figure 8) on the valve.
24. Connect the adapter harness to the main wire harness connector labeled "purge valve". Reference Figure 5
25. Trim the leads to the fill valve in the plumbing assy (Reference Figure 9) to within about 6" of the valve and install the "WIRE HARNESS FILL VLV ADPTR" (Figure 10) on the ends of the leads.
26. Connect the valve harness adapter to the new wire harness connection labeled "fill valve". Reference Figure 5.
27. Connect the level sensor tube to the hose barb on the valve of the new panel. Reference Figure 4.

## INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.

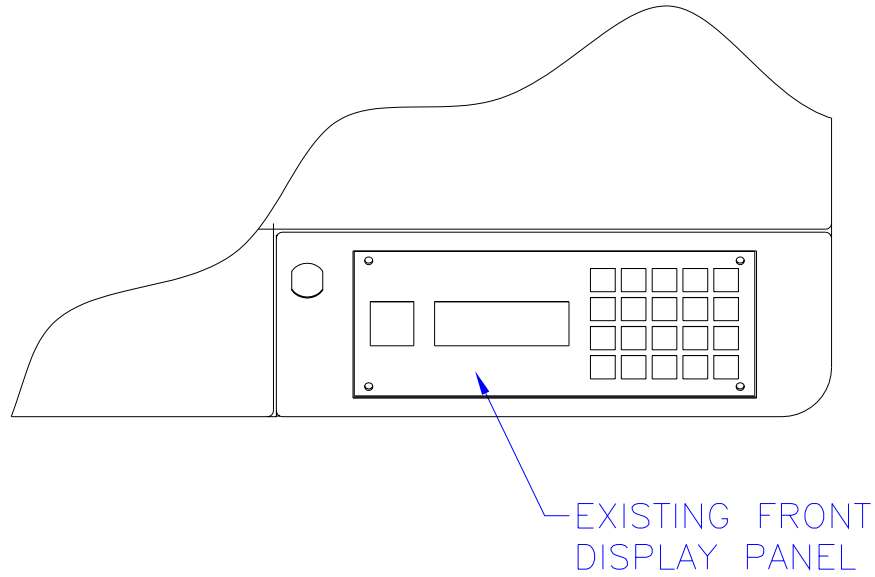
28. Connect the 30VDC input cable from the power supply to the receptacle on the bottom of the new rear control panel. Reference Figure 4. This cable will have to pass out of the cabinet through the bottom.
29. Reinstall the rear cabinet panel.
30. Reinstall the front cabinet panel.
31. Connect the mains power cord provided to the new power supply
32. Follow the instructions in the new quick start manual provided for startup check out and programming.

For additional technical information on the new TEC3000 control system, contact Chart customer/technical service at 770 257-1299 or 800 482-2473 and order the technical manual P/N 13289499.

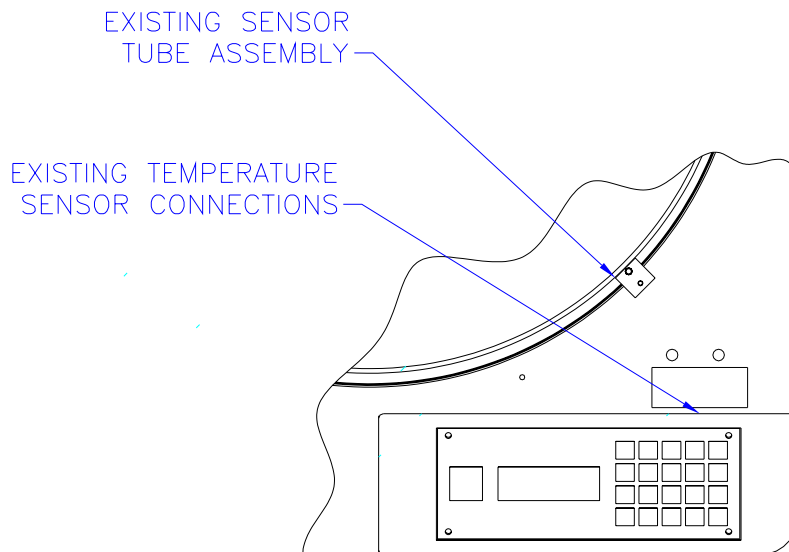


**Figure 1, EXISTING REAR CONTROL PANEL AND PLUMBING REFERENCE FOR XLC 500/1200 FIRST GENERATION (ROUND CORNER CABINET)**

**INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

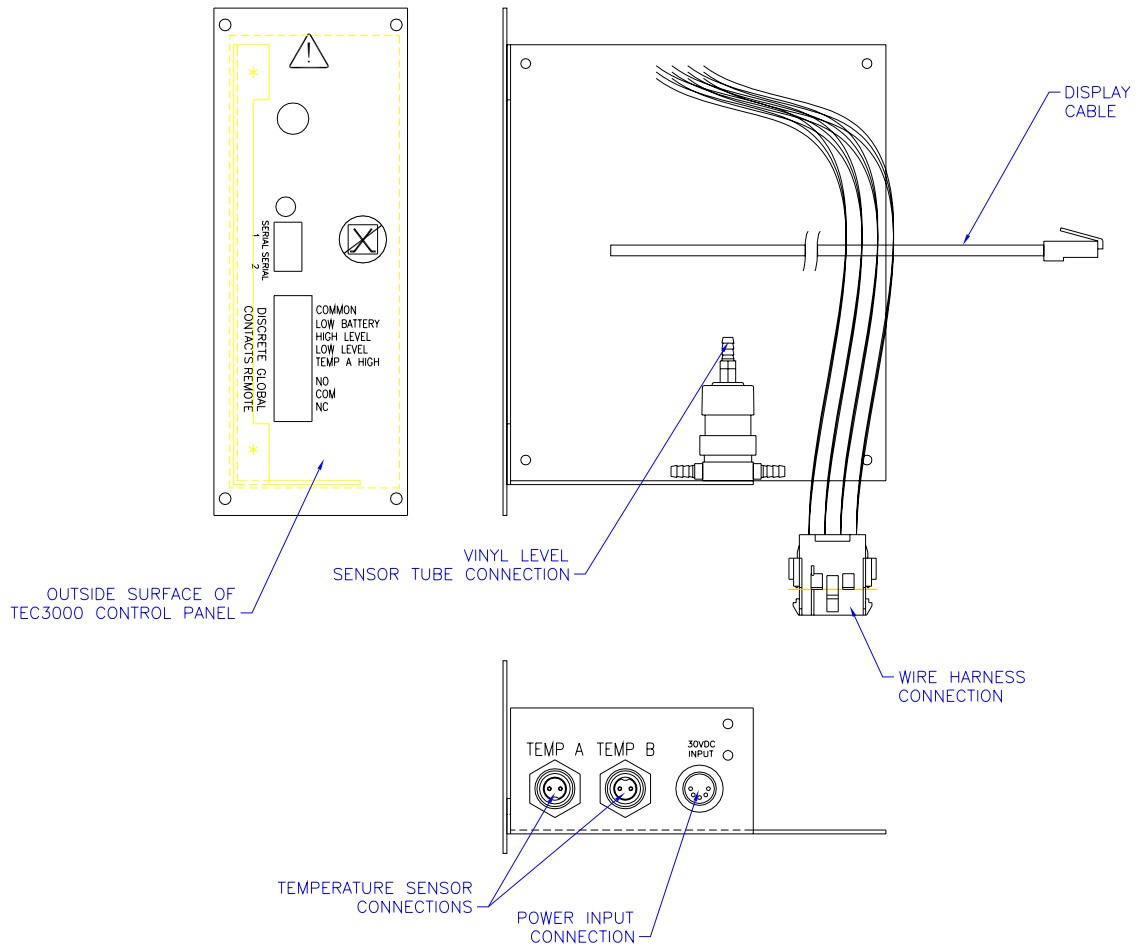


**Figure 2, FRONT PANEL DETAIL XLC 500/1200 FIRST GENERATION (ROUNDED CORNER CABINET)**



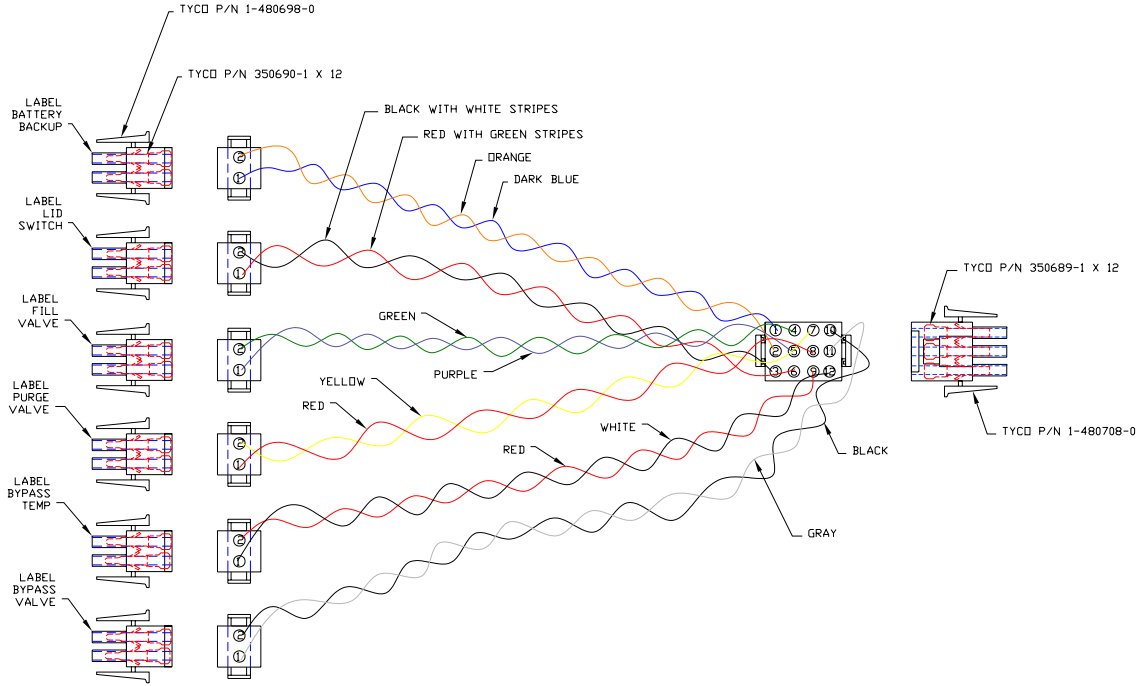
**Figure 3, SENSOR CONNECTION AND TUBE, XLC 500/1200 FIRST GENERATION (ROUNDED CORNER CABINET)**

# INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.

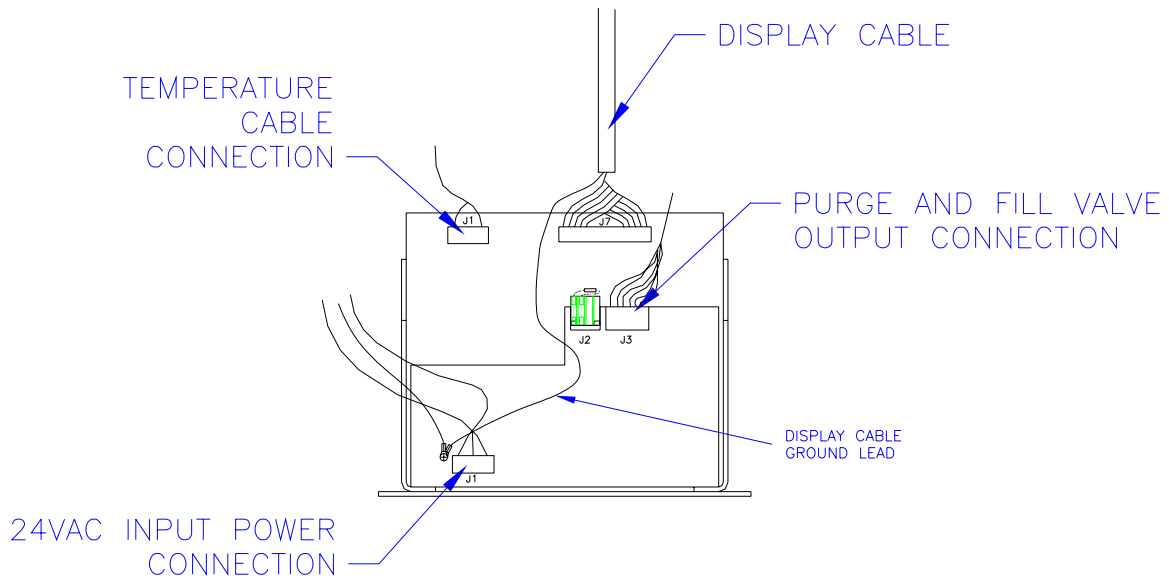


**Figure 4, TEC3000 CONTROL PANEL DETAILS**

# INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.

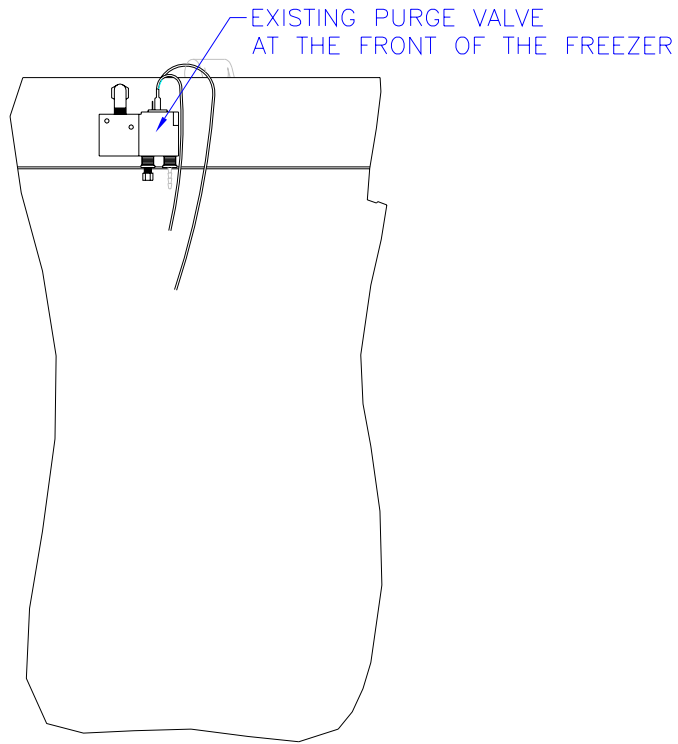


**Figure 5, NEW WIRE HARNESS**

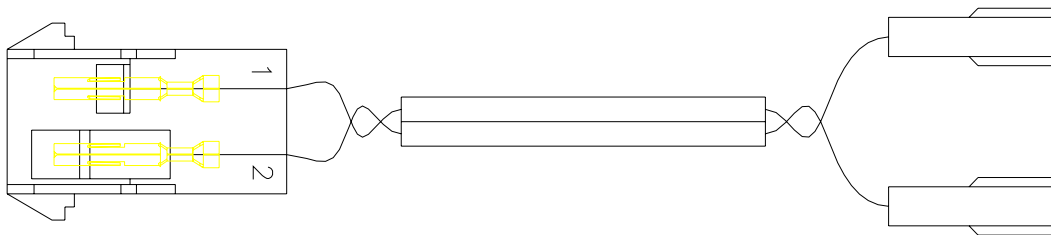


**Figure 6, EXISTING TEC2000 CONTROL PANEL DETAILS FOR ALL CABINET MODELS**

**INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

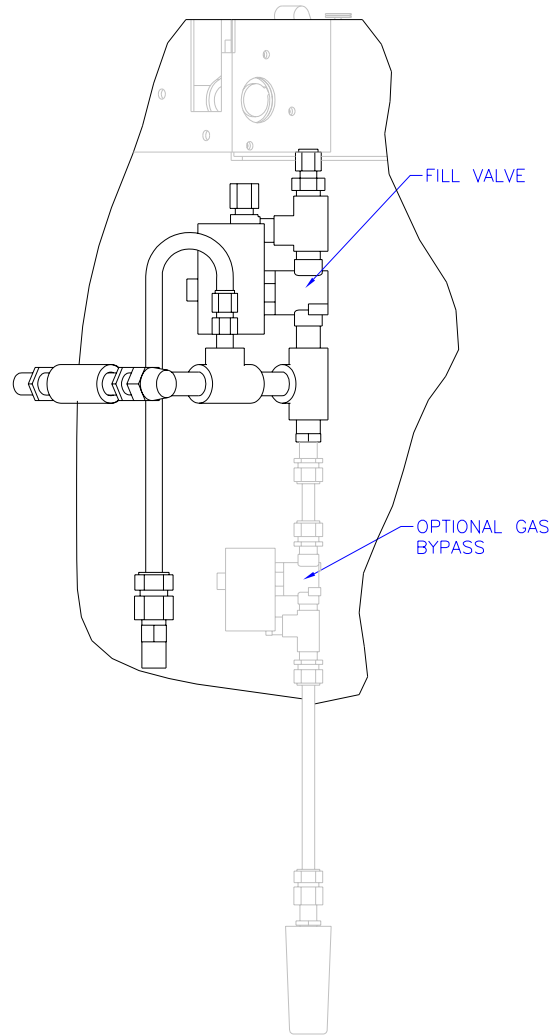


**Figure 7, PURGE VALVE DETAIL XLC 500/1200 FIRST GENERATION (ROUNDED CORNER CABINET)**

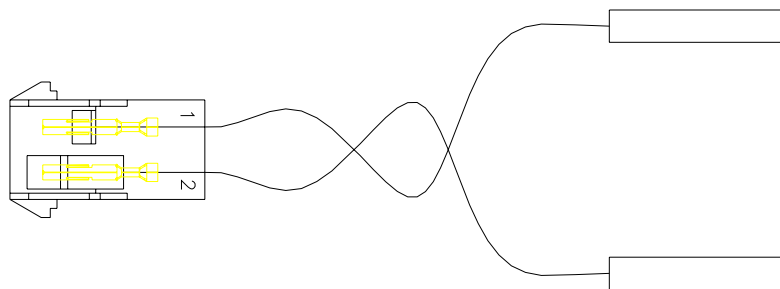


**Figure 8, PURGE VALVE ADAPTER HARNESS**

**INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**



**Figure 9, PLUMBING ASSEMBLY DETAIL XLC 500/1200 FIRST GENERATION (ROUNDED CORNER CABINET)**



**Figure 10, FILL VALVE ADAPTER HARNES**

# **INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

## **CONVERSION PROCEDURE XLC/MVE 500/1200 SECOND GENERATION (SQUARE CORNER CABINET)**

1. **DISCONNECT THE POWER CORD FROM THE WALL OUTLET.**
2. **SHUT OFF THE LN2 SUPPLY AND DISCONNECT THE TRANSFER HOSE FROM THE FREEZER.**
3. Remove the center rear panel of the cabinet. Reference Figure 11
4. Remove the rear control panel from the cabinet. Reference Figure 11.
5. Disconnect 24VAC input power cable, ground leads, temperature cable, display cable, purge/fill valve harness, and tubing from the rear panel. Reference Figure 6
6. Remove the bezel that retains the existing front display panel in the top front edge of the lid. Reference Figure 12.
7. Disconnect the display cable from the back of the display panel.
8. Disconnect the ground leads from the display and cable from inside the recess in the lid.
9. Loosen the clamp on the conduit elbow that holds the split bushing that secures the display cable at the rear of the lid. Reference Figure 11. Retain the bushing for use on the new display cable.
10. Turn the 34 pin connector on the display end of the cable sideways and feed the cable thru the conduit inside the lid to remove it.
11. Disconnect the temperature sensors from the receptacles, reference Figure 14.
  - 11.1. The temperature sensors will be retained, so do not discard them.
12. Remove the screw that holds the temperature probe receptacle panel in the recess in the top panel, and pull the panel and cable end through the opening.
13. Remove the temperature cable receptacle end connections from the panel.
  - 13.1. The existing temperature cable will not be reused, but it should not be removed from the cabinet yet, as it will be used to pull the new temperature cable through the cabinet.
14. Check the required length of intermediate temperature cable from the rear to the front of the cabinet and determine whether one or two cables will be required.
  - 14.1. If two are required, connect the two cables end to end, making sure to connect A to A and B to B as labeled.

If only one is required, you can return the unused cable. Contact customer/technical service for an RMA.
15. Tie the end of the new intermediate temperature cable (the receptacle end that the sensors would connect to) to the control panel end of the original temperature cable and pull it through the cabinet using the original cable.

## **INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

16. Install the receptacles in the panel removed in step 12. These should be labeled A and B. install in the corresponding labeled hole. The probe label is on the top panel.
17. Reinstall the receptacle panel in the top panel recess.
18. Reconnect the sensors.
19. Install the new rear control panel in the rear of the cabinet where the original panel was installed.
20. Feed the display cable that is attached to the new rear panel (it has an RJ45 network type connection on it. reference Figure 4) through the oval cutout in the cabinet near the top of the panel that the control panel mounts in. Reference Figure 11.
21. Feed the display cable through the elbow at the rear of the lid until it exits the conduit through the lid into the display cavity at the front of the lid.
22. Remove the nuts from the studs on the back of the new display.
23. Fit the display spacer (4 sided SS box) to the back of the display so that the studs on the back of the display fit into corners of the spacer.
24. Connect the new display cable to the new display.
25. Install the new display and spacer on the lid covering the display cavity. Reference Figure 13.
26. Install the bezel on the display as it was installed on the original display.
27. Install the new 1 ½" long screws to secure the bezel, display and spacer to the lid.
28. Install the split cable bushing removed in step 9 over the new display cable.
29. Slide the split bushing into the conduit clamp and tighten the clamp. If the clamp and bushing will not tighten enough to grip the cable, wrap several layers of tape around the cable to allow the bushing to grip the cable.
30. Connect the new intermediate temperature cable to the new rear panel at the connections provided on the bottom of the panel. Reference Figure 4
31. Connect the new wire harness provided to the matching connector that is hanging from the new control panel. Reference Figure 4 and Figure 5
32. Disconnect the existing harness leads from the purge valve. Reference Figure 15.
33. Install the "WIRE HARNESS PURGE VLV ADPTR" (Figure 8) on the valve.
34. Connect the adapter harness to the main wire harness connector labeled "purge valve". Reference Figure 5
35. Trim the leads to the fill valve in the plumbing assy (Reference Figure 15) to within about 6" of the valve and install the "WIRE HARNESS FILL VLV ADPTR" (Figure 10) on the ends of the leads.

## **INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

36. Connect the valve harness adapter to the new wire harness connection labeled "fill valve". Reference Figure 5.
37. Connect the level sensor tube to the hose barb on the valve of the new panel. Reference Figure 4.
38. Remove the existing power supply from the rear of the freezer. Reference Figure 15.
39. Install the Jerome power supply upgrade kit included where the original power supply was installed.
40. Connect the 30VDC input cable from the power supply to the receptacle on the bottom of the new rear control panel. Reference Figure 4. Feed the input power cord through the opening in the rear of the cabinet.
41. Reinstall the center rear cabinet panel.
42. Follow the instructions in the new quick start manual provided for startup check out and programming.

For additional technical information on the new TEC3000 control system, contact Chart customer/technical service at 770 257-1299 or 800 482-2473 and order the technical manual P/N 13289499.

# INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.

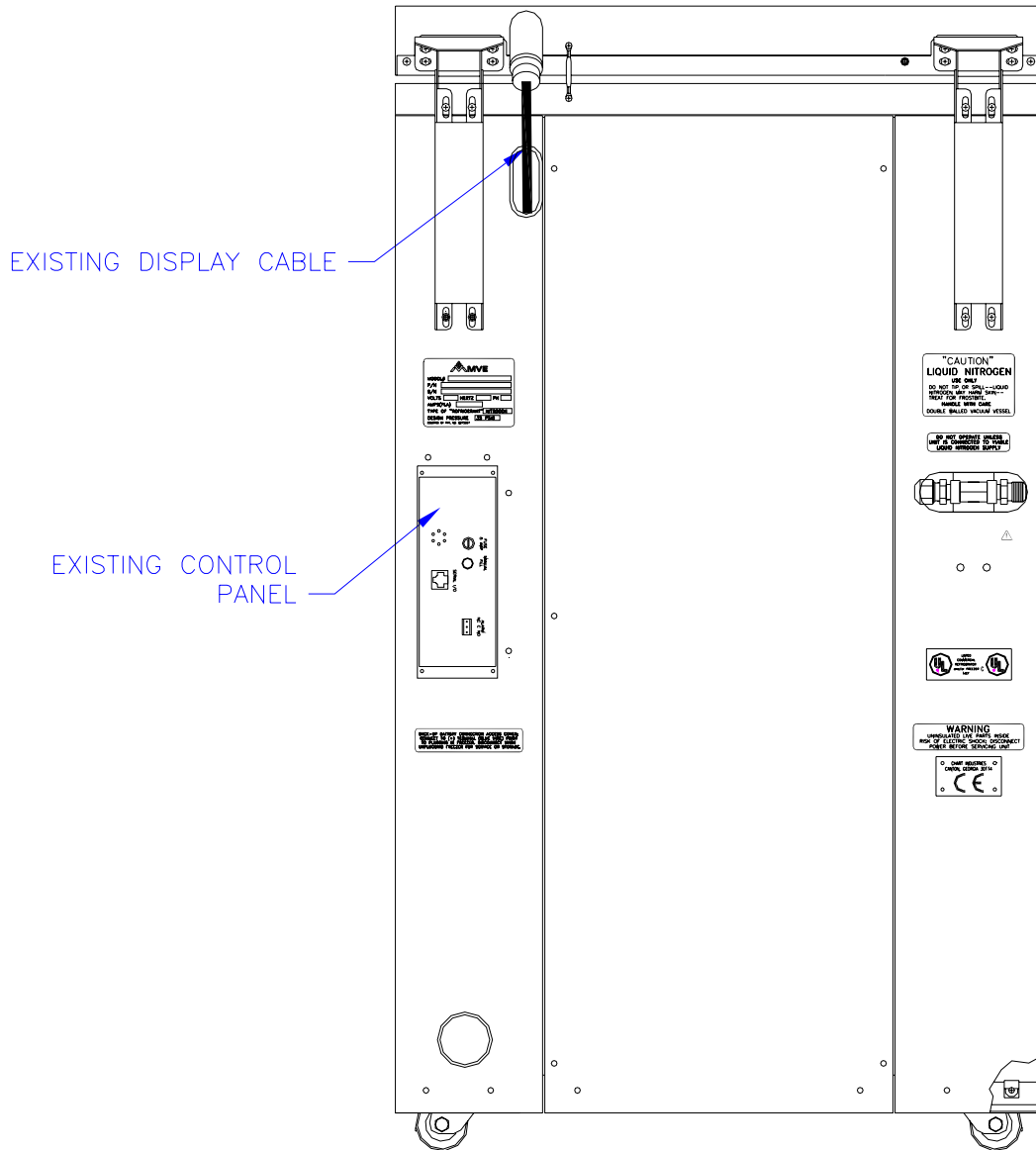
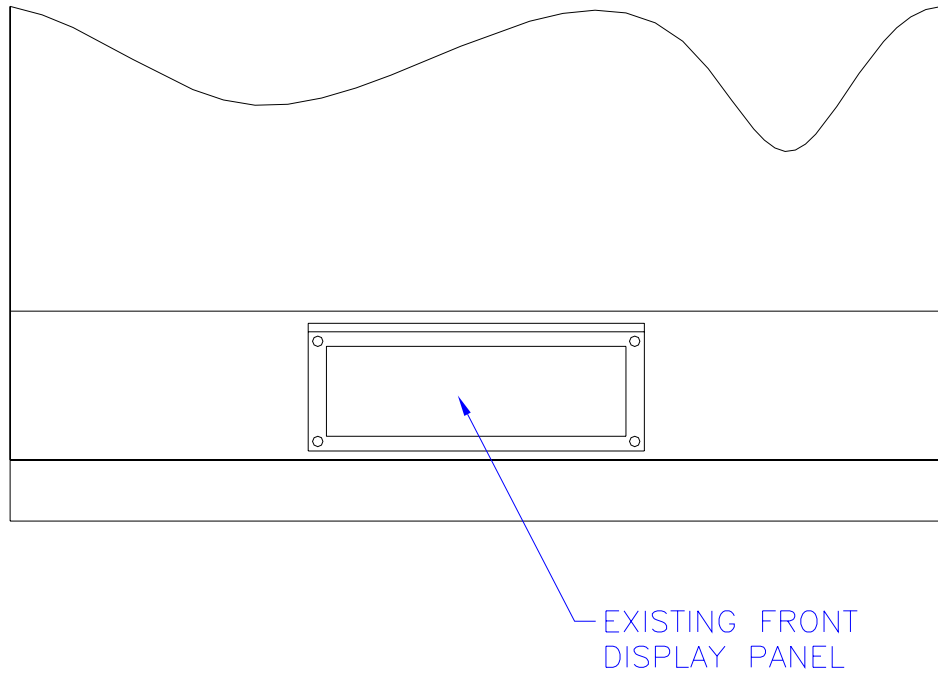
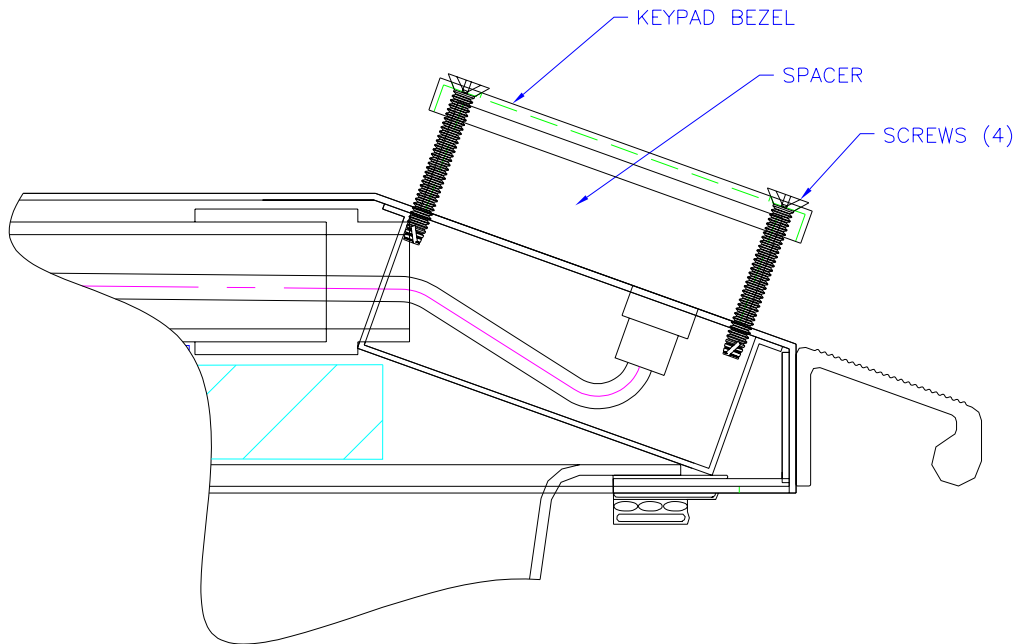


Figure 11, EXISTING REAR CONTROL PANEL REFERENCE XLC/MVE 500/1200 SECOND GENERATION (SQUARE CORNER CABINET)

**INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

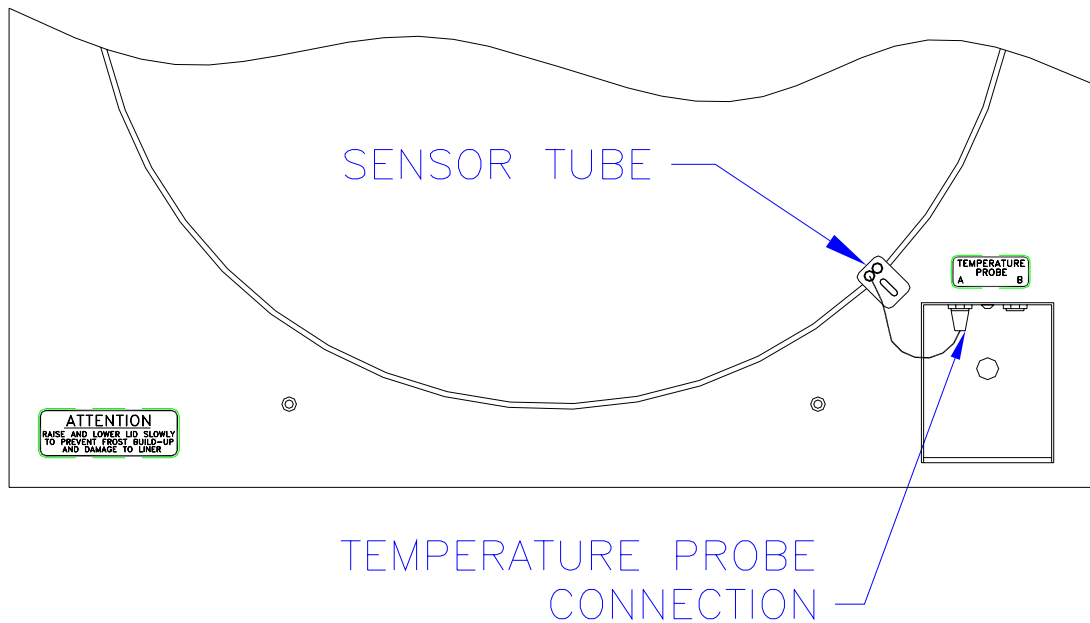


**Figure 12, FRONT PANEL DETAIL XLC/MVE 500/1200 SECOND GENERATION (SQUARE CORNER CABINET)**



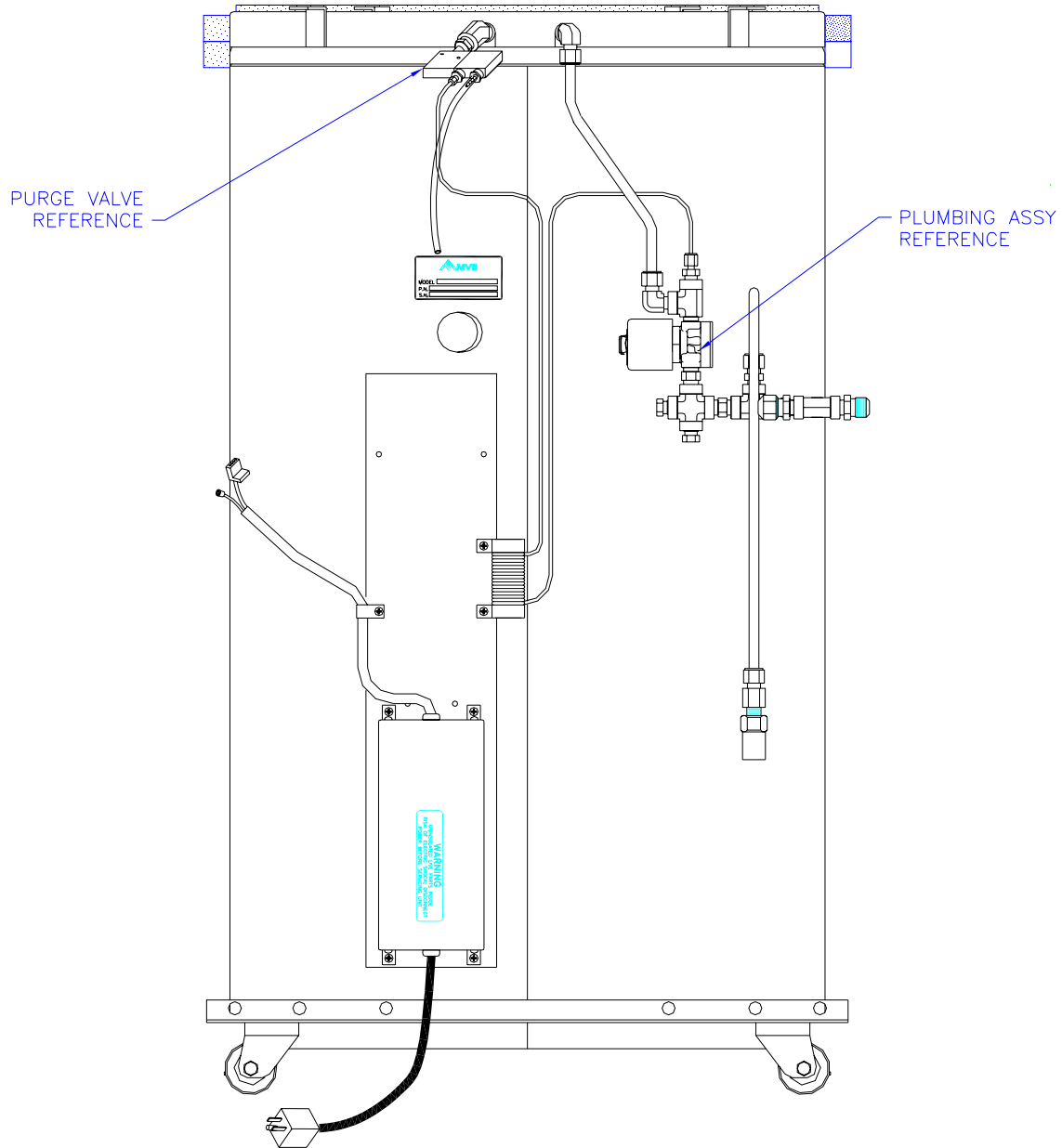
**Figure 13, SECTION VIEW WITH SPACER INSTALLED**

**INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**



**Figure 14, SENSOR CONNECTION AND TUBE, XLC/MVE 500/1200 SECOND GENERATION (SQUARE CORNER CABINET)**

**INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**



**Figure 15, EXISTING PLUMBING AND PURGE VALVE REFERENCE XLC/MVE 500/1200 SECOND GENERATION (SQUARE CORNER CABINET). CABINET REMOVED FOR CLARITY**

# **INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

## **CONVERSION PROCEDURE MVE 600/1400**

1. **DISCONNECT THE POWER CORD FROM THE WALL OUTLET.**
2. **SHUT OFF THE LN2 SUPPLY AND DISCONNECT THE TRANSFER HOSE FROM THE FREEZER.**
3. Remove the rear panel from the rear enclosure. Reference Figure 16.
4. Remove the rear control panel from the cabinet. Reference Figure 16.
5. Disconnect 24VAC input power cable, ground leads, temperature cable, display cable, purge/fill valve harness, and tubing from the rear panel. Reference Figure 6
6. Remove the recess bracket that carries the existing front display panel in the front panel of the cabinet. Reference Figure 17.
7. Disconnect the display cable from the back of the display panel.
  - 7.1. The existing cable will not be reused, but it should not be removed from the cabinet yet, as it will be used to pull the new display cable through the cabinet.
8. Remove the existing front panel from the recess bracket.
9. Disconnect the temperature sensors from the receptacles, reference Figure 16.
  - 9.1. The temperature sensors will be retained, so do not discard them.
10. Remove the temperature cable receptacle end connections from the bracket that they are attached to and remove from the enclosure. Reference Figure 16.
11. Install the receptacles of one of the new intermediate temperature cables in the bracket that the existing cable was removed from in step 10. These should be labeled A and B. correlate them to the label on the top panel where the sensors come through the top panel. Reference Figure 18
  - 11.1. Only one intermediate cable is required in this application, you can return the unused cable if desired. Contact customer/technical service for an RMA.
12. Reconnect the temperature sensors.
13. Install the new rear control panel in the rear of the cabinet where the original panel was installed.
14. Tie the end of the display cable that is attached to the new rear panel (it has an RJ45 network type connection on it. reference Figure 4) to the control panel end of the existing display cable, and pull the new display cable through the cabinet to the front panel.
15. Install the new display in the recess bracket.
16. Connect the new display cable to the new display.

## **INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**

17. Reinstall the recess bracket into the front panel of the cabinet.
18. Connect the new intermediate temperature cable to the new rear panel at the connections provided on the bottom of the panel. Reference Figure 4
19. Connect the new wire harness provided to the matching connector that is hanging from the new control panel. Reference Figure 4 and Figure 5
20. Disconnect the existing harness leads from the purge valve. Reference Figure 16.
21. Install the “WIRE HARNESS PURGE VLV ADPTR” (Figure 8) on the valve.
22. Connect the adapter harness to the main wire harness connector labeled “purge valve”. Reference Figure 5
23. Trim the leads to the fill valve in the plumbing assy to within about 6” of the valve and install the “WIRE HARNESS FILL VLV ADPTR” (Figure 10) on the ends of the leads.
24. Connect the valve harness adapter to the new wire harness connection labeled “fill valve”. Reference Figure 5.
25. Connect the level sensor tube to the hose barb on the valve of the new panel. Reference Figure 4.
26. Remove the existing power supply from the rear of the freezer. Reference Figure 16.
27. Install the Jerome power supply upgrade kit included where the original power supply was installed.
  - 27.1. If the freezer is already equipped with a Jerome power supply, the Jerome upgrade kit can be returned, contact customer/technical service for an RMA.
28. Connect the 30VDC input cable from the power supply to the receptacle on the bottom of the new rear control panel. Reference Figure 4. Feed the input power cord through the opening in the bottom of the rear enclosure.
29. Reinstall the center rear cabinet panel.
30. Follow the instructions in the new quick start manual provided for startup check out and programming.

For additional technical information on the new TEC3000 control system, contact Chart customer/technical service at 770 257-1299 or 800 482-2473 and order the technical manual P/N 13289499.

# INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.

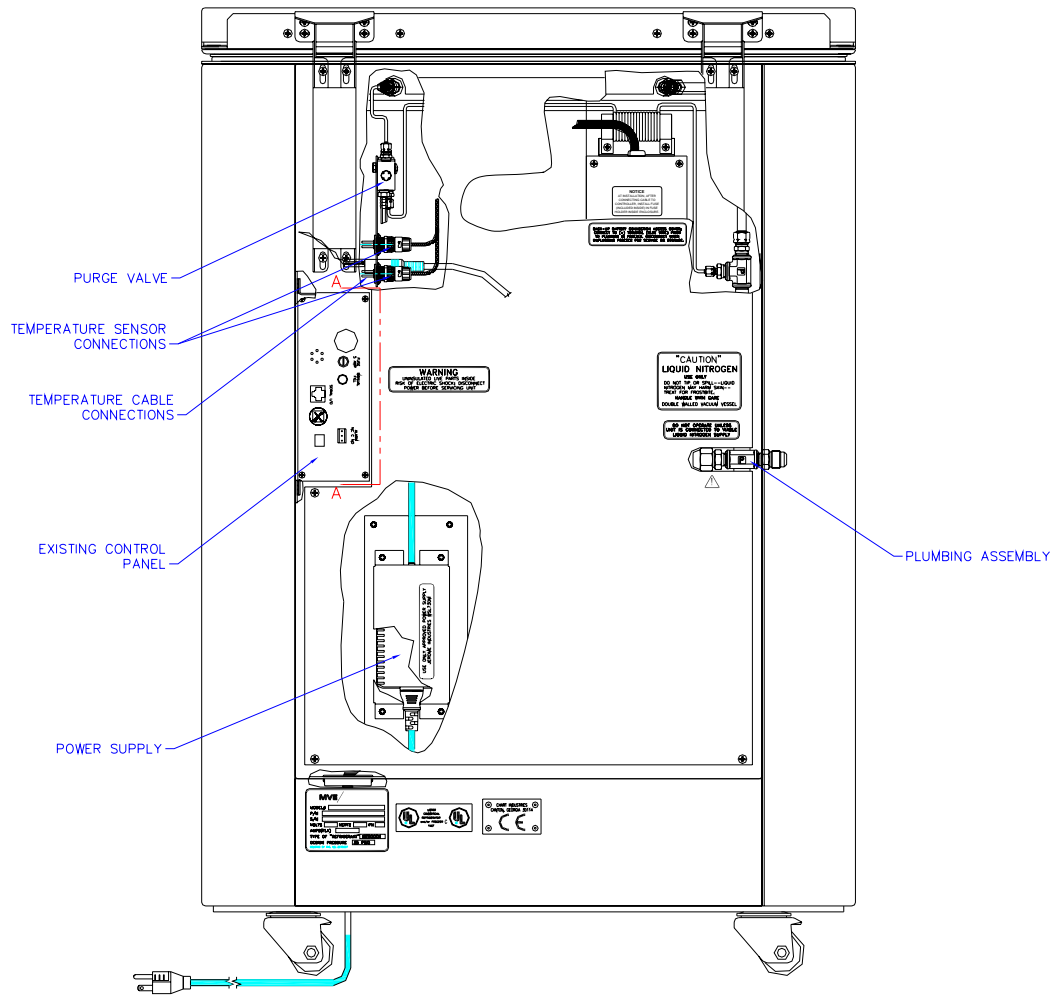
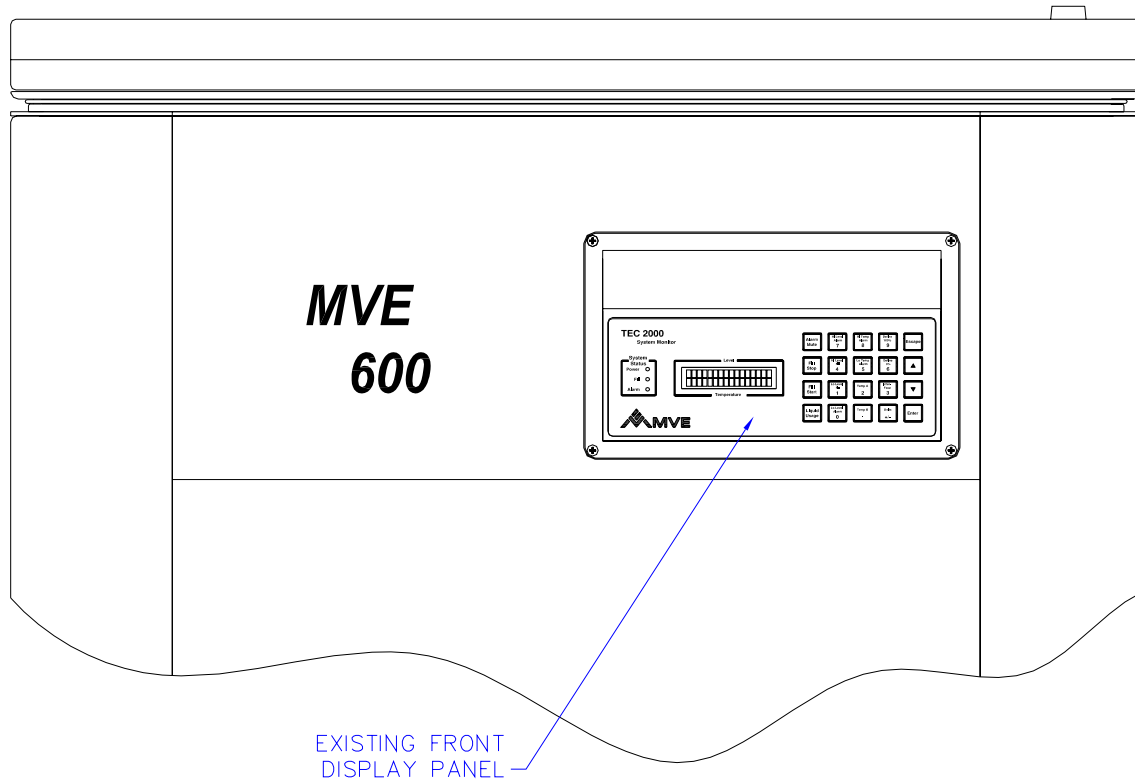
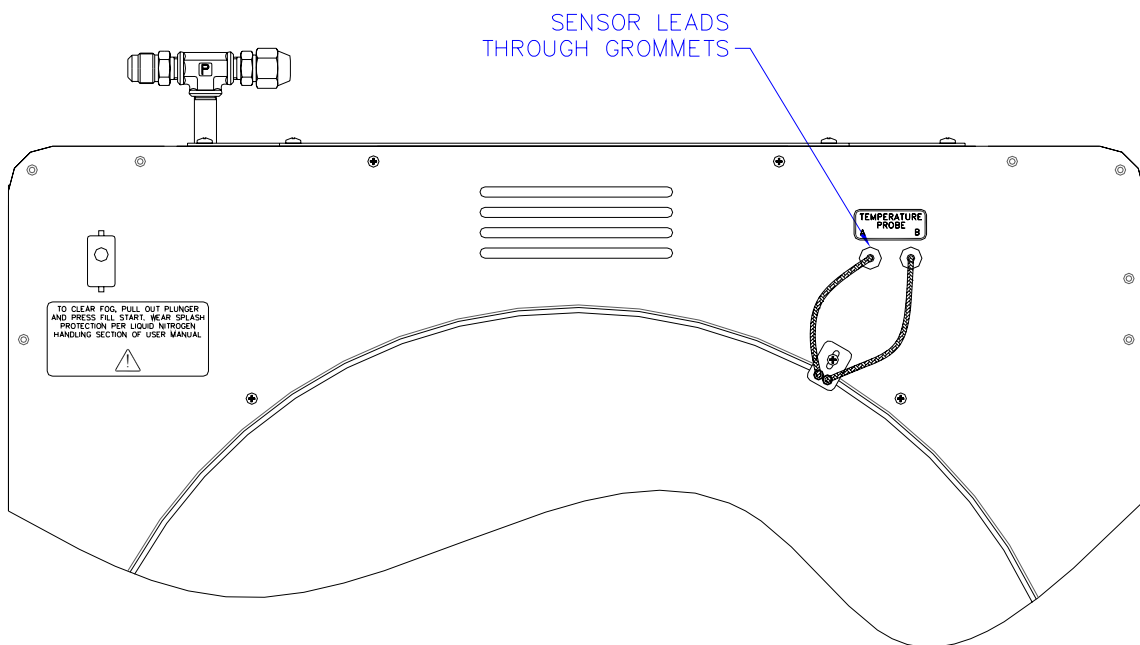


Figure 16, EXISTING REAR CONTROL PANEL REFERENCE MVE 600/1400.

**INSTRUCTIONS FOR CONVERSION OF MICRODYNAMICS TEC2000 CONTROLLED CABINET FREEZERS TO TEC3000 CONTROL.**



**Figure 17, FRONT PANEL DETAIL MVE 600/1400**



**Figure 18, SENSOR DETAIL MVE 600/1400**