

Rosemount™ 700XA

Gas Chromatograph



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Precautions and warnings

Note

The analyzer electronics and oven assembly, when housed inside a purged enclosure, meet the certifications and classifications identified in the Specifications section of the this manual (see) and in the Rosemount 700XA Product Data Sheet, which is located on the Rosemount website (Emerson.com/Rosemount). Emerson does not, however, accept any responsibility for installations of these, or any attached equipment, in which the installation or operation thereof has been performed in a manner that is negligent and/or non-compliant with applicable safety requirements.

⚠ WARNING

SAFETY COMPLIANCE

Install and operate all equipment as designed and comply with all safety requirements. The seller does not accept any responsibility for installations of the Rosemount Gas Chromatograph or any attached equipment in which the installation or operation thereof has been performed in a manner that is negligent and/or non-compliant with applicable safety requirements.

⚠ WARNING

SAFETY COMPLIANCE

If the unit is not operated in a manner recommended by the manufacturer, the overall safety could be impaired.

⚠ WARNING

SUPPLY MAINS CONNECTION

The unit is intended to be connected to supply mains by qualified personnel in accordance with local and national codes.

⚠ WARNING

EXPLOSION HAZARD

Do not open when energized or when an explosive atmosphere is present.

⚠ WARNING

EXPLOSION HAZARD

Keep cover tight while circuits are live.

⚠ WARNING

EXPLOSION HAZARD

Use cables or wires suitable for the marked "T" ratings.

⚠ WARNING

EXPLOSION HAZARD

Cover joints must be cleaned before replacing the cover.

⚠ WARNING

EXPLOSION HAZARD

Conduit runs to GC enclosure must have sealing fitting adjacent to enclosure.

⚠ WARNING

VENTILATION

The unit is required to be used in a well ventilated area.

⚠ WARNING

LEAK TESTING

All gas connections must be properly leak tested at installation.

⚠ WARNING

PRECAUTIONARY SIGNS

Observe and comply with all precautionary signs posted on the GC. Failure to do so may result in injury or death to personnel or cause damage to the equipment.

⚠ WARNING

VENTILATION

If you plan to place the GC in a sealed shelter, always vent the GC to atmosphere with ¼-in. tubing or larger. This will prevent the build up of H₂ and sample gas

⚠ WARNING

TOXIC VAPORS

Exit ports may discharge dangerous levels of toxic vapors.

Use proper protection and a suitable exhaust device.

⚠ WARNING

BURN HAZARD

Some parts of the analyzer may be heated to 120 °C (248 °F).

To prevent burns, do not touch any of the hot parts. All parts of an analyzer are always hot unless it has been switched off and allowed to cool down.

Before fitting, removing, or performing any maintenance on the analyzer, make sure that it has been switched off and allowed to cool for at least two hours.

When handling the analyzer, always use suitable protective gloves.

These precautions are particularly important when working at heights.

If burned, seek medical treatment immediately.

Failure to observe this warning could cause an explosion or potentially hazardous situation, which if not avoided, may cause personal injury or death.

⚠ CAUTION

REPLACEABLE PARTS

No user replaceable parts inside except a few parts which are only to be accessed by trained service personnel. All replacement parts must be authorized by Rosemount to ensure product certification compliance.

⚠ WARNING

Physical access

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

NOTICE

The Rosemount 700XA is CSA-certified and ATEX-certified. See the certification tag on the GC for specific details about its agency approvals.

NOTICE

When the vapor regulators and flow switches are fitted, they must be suitably certified with the ratings **Ex d IIC Gb T6/T4/T3** and for a minimum ambient temperature range **Ta = -4 °F to +140 °F (-20 °C to +60 °C)**.

NOTICE

Where right angle bend cable adapters are used, they shall be appropriately certified and shall interface with enclosures via appropriate certified barrier glands.

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1 Getting started

Emerson started and inspected your gas chromatograph (GC) before it left the factory. Emerson also installed program parameters and documented them in the GC Config Report furnished with your GC.

1.1 Select site

The site you select for the gas chromatograph (GC) is important for measurement accuracy.

Procedure

Install the GC as close as possible to the sample system, but allow for adequate access space for maintenance tasks and adjustments.

⚠ WARNING

HAZARDOUS AREA EXPLOSION HAZARD

Failure to follow this warning may result in injury or death to personnel.

Do not use a personal computer (PC) or printer in a hazardous area.

Emerson provides serial and Ethernet communication links to connect the analyzer to the PC and to connect to other computers and printers in a safe area.

Allow a minimum of 3 ft. (0.9 m) in front of the GC for operator access. Ensure that exposure to radio frequency interference (RFI) is minimal.

1.2 Unpack the gas chromatograph (GC)

Unpack and inspect the Rosemount 700XA gas chromatograph upon receipt.

⚠ WARNING

LIFTING HAZARD

The Rosemount 700XA is heavy equipment. Failure to observe this warning may cause serious injury to personnel.

Use two people to move the GC.

Observe all proper lifting methods as defined by your site operating procedures.

Procedure

1. Unpack the equipment.
 - a) Remove the Rosemount 700XA from the shipping crate.
 - b) Remove the USB memory stick containing the software, applications, Quick Start Guide, and manuals.

Note

The MON2020 version number is located on the back of the USB card.

2. Retain the shipping information.
3. Inspect all parts and assemblies for possible shipping damage.
4. If any parts or assemblies appear to have been damaged in shipment, first file a claim with the carrier.
5. Next, complete a full report describing the nature and extent of the damage and forward this report immediately to your Emerson Customer Care representative.
6. Include the GC's model number in the report.

Emerson will provide disposition instructions as soon as possible.

If you have any questions regarding the claim process, contact your Emerson Customer Care representative for assistance.

Only proceed to install and start up the GC if all required materials are on hand and free from obvious defects.

1.3 Required tools and components

You will need the following tools and components to install the 700XA

- Zero grade carrier gas:
 - 99.995% pure
 - Less than 5 ppm water
 - Less than 0.5 ppm hydrocarbons
- High pressure dual-stage regulator for the carrier gas cylinder
 - High side up to 3000 psig (20684.3 kPa)
 - Gauge (psig)
 - Low side capable of controlling pressure up to 150 psig (1034.2 kPa)
- Calibration standard gas with correct number of components and concentrations
- Dual-stage regulator for the calibration gas cylinder with a low pressure side capable of controlling pressure up to 30 psig (206.9 kPa)
- Sample probe regulator (fixture for procuring the stream or sample gas for chromatographic analysis)
- Coalescing filter
- Membrane filter
- 1/8-in. stainless steel tubing
 - For connecting calibration gas to the GC
 - For connecting carrier gas to the GC
 - For connecting stream gas to the GC
 - Sulfinert tubing required if sulfur components are present in calibration gas
- Heat tracing, as required for sample transport and calibration lines
- Miscellaneous tube fittings, tubing benders, and tubing cutter
- 14 American wire gauge (AWG) (18 metric wire gauge [MWG]) or larger electrical wiring and conduit to provide 120 or 240 Vac, single phase, 50 to 60 Hz, from an appropriate circuit breaker and power disconnect switch. See guidelines in [Gas chromatograph wiring](#).
- Digital volt-ohm meter with probe-type leads
- Flow measuring device
- Open-end wrenches sized 1/4-in., 5/16-in., 7/16-in., 1/2-in., 9/16-in., and 5/8-in.
- Torque wrench

1.4 Supporting tools and components

WARNING

Failure to follow this warning may result in injury or death to personnel or cause damage to the equipment.

Do not use a personal computer (PC) or printer in a hazardous area.

Emerson provides serial port and Modbus® communication links to connect the gas chromatograph (GC) to the PC and to connect to other computers and printers in a safe area.

- Use a Windows®-based PC and either a direct or remote communications connection to interface with the GC. See the [MON2020 Software for Gas Chromatographs Reference Manual](#) for more information on specific PC requirements.
- The GC comes with an Ethernet port on the back plane factory-wired with an RJ-45 connector. Refer to [Connect directly to a personal computer \(PC\) using the gas chromatograph's \(GC's\) Ethernet1 port](#) for more information.

2 Installation and start-up

Note

Because the Rosemount 700XA is available in different configurations, it is possible that not all of the instructions in this section apply to your particular gas chromatograph (GC). In most cases, however, to install and set up a Rosemount 700XA, Emerson recommends that you follow the instructions in the same order as they are presented in this manual.

2.1 Installation considerations

Before installing the gas chromatograph (GC):

1. **⚠ WARNING**

The GC is heavy and has a high potential of injuring personnel or damaging equipment.

Anchor the GC solidly before making electrical connections. Several options for mounting the GC are covered in [Mounting arrangements](#).

2. Ensure that the connections to the enclosure meet local standards.
3. Use approved seals: either cable glands or conduit seals.
 - a. Install conduit seals within 3 in. (76.2 mm) of the enclosure.
 - b. Seal unused openings with approved blanks (plugs). Threads for these openings are M32 x 1.5.

4. Remove any packing materials before powering up the GC.

5. **⚠ WARNING**

Do not power up an open GC unless the surrounding area is certified non-hazardous.

6. **⚠ WARNING**

HAZARDOUS AREA EXPLOSION HAZARD

Failure to follow this warning may result in injury or death to personnel.

Do not use a personal computer (PC) or printer in a hazardous area.
Emerson provides serial and Ethernet communication links to connect the analyzer to the PC and to connect to other computers and printers in a safe area.

2.2 Mounting arrangements

The Rosemount 700XA can be installed in one of the following mounting arrangements:

- Wall mount
- Pole mount
- Floor mount

⚠ WARNING

HEAVY EQUIPMENT

Due to the size, weight, and shape of the gas chromatograph (GC), at least two people are required to safely mount it.

Ensure that you understand the installation procedure before handling the GC and collect the appropriate tools beforehand.

When putting the GC into its final position, be careful to avoid damaging any of the external components or their attachments.

2.2.1 Wall mount

The simplest mounting arrangement is the wall mount.

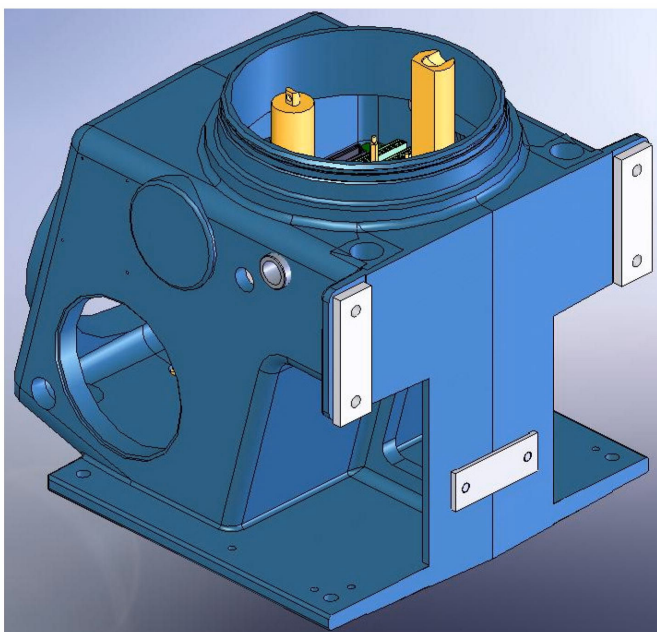
If you specify *Wall Mount* on the sales order, Emerson will ship the gas chromatograph (GC) with a wall mount installation kit. Four locations on the mounting ears are available for support.

⚠ WARNING

HEAVY EQUIPMENT

Until all bolts are tight, ensure that the GC is supported to prevent unforeseen accidents.

Figure 2-1: Wall Mount



Prerequisites

Pre-install a pair of 7/16-in. (10 mm) diameter bolts with washers on the wall before installing the final pair of bolts.

The first pair of bolts should be approximately 41.625 in. (1055 mm) off the ground, and 13.625 in. (346 mm) apart. Each bolt should have $\frac{5}{8}$ in. (16 mm) of bare length projecting. Drill a second pair of holes 3.56 in. (90.5 mm) above the first.

Procedure

1. Maneuver the GC so that the notches in the mounting ears can be placed over the bolts on the wall and then place the washers over the bolts.
2. Install the second pair of bolts with washers and then tighten all the bolts.

2.2.2 Pole mount

Prerequisites

The pole mount arrangement uses an additional plate and spacers to allow the necessary clearance for nuts.

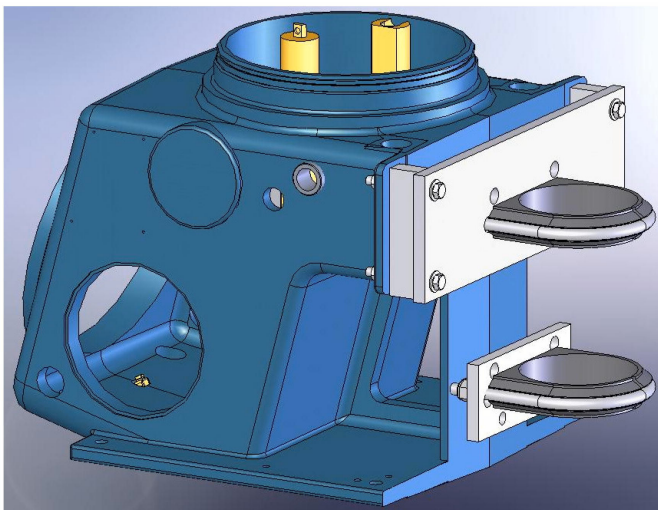
If you specify *Pole Mount* on the sales order, Emerson will provide the necessary hardware.

⚠ WARNING

HEAVY EQUIPMENT

Until all bolts are tight, ensure that the gas chromatograph (GC) is supported to prevent unforeseen accidents.

Figure 2-2: Pole Mount



Procedure

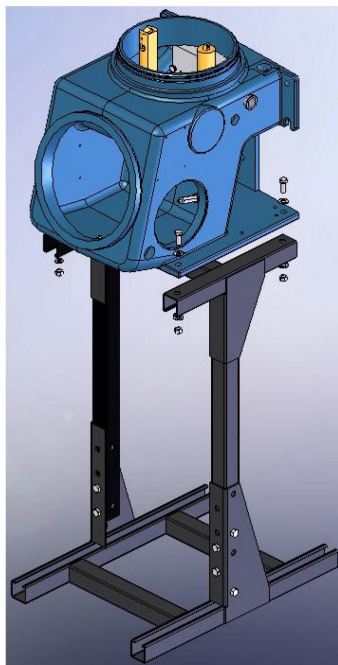
1. Use the U-bolt to firmly install the large plate on the pole about 44 in. (1120 mm) above the ground.
2. Install the long bolts and spacers.
3. Place nuts and washers on the lower bolts.
4. Install the small plate just tightly enough to hold its position, with the small plate's U-bolt about 6.875 in. (174.625 mm) below the large plate's U-bolt.
5. Hold the matching spacer in place with the bolts installed loosely.
6. Orient the GC so that the notches in the mounting ears can be placed over the lower bolts on the plate and then add the washers and nuts.
7. Place the nuts with washers on the upper bolts and then tighten all bolts.
8. Adjust the lower bracket to align the bolts with the plate. Tighten the bolts.

2.2.3 Floor mount

If you specify *Floor Mount* in the sales order, Emerson sends the arrangement pre-assembled with the gas chromatograph (GC).

The arrangement includes an additional support stand that is intended to be anchored to a floor or an instrument pad. The base rails have holes that are 13.625 in. (346 mm) apart, side to side, and 16.75 in. (425.5 mm) apart front to back. The holes are ½ in. (12.7 mm) in diameter and will accept up to 7/16-in. (10 mm) bolts.

Figure 2-3: Floor Mount



2.3 Gas chromatograph wiring

2.3.1 Wiring precautions

- All wiring, as well as circuit breaker or power disconnect switch locations, must conform to the CEC or NEC; all local, state, or other jurisdictions; and company standards and practices.
- Provide single-phase, three-wire power at 115 or 220 Vac, 50-60 Hz.

NOTICE

If you do not have a single phase, three-wire AC power source, you must purchase an isolation transformer.

- Locate a power shut-off or disconnect switch in a safe area.
- Provide the gas chromatograph (GC) and any optionally installed devices with one 20-amp circuit breaker for protection.

⚠ CAUTION

POWER

15 amps is the maximum current for 14 American Wire Gauge (AWG).

- Use multi-stranded copper conductor wire according to the following recommendations:
 - For power feed distances up to 250 ft. (76 m), use 14 AWG (18 Metric Wire Gauge), stranded.
 - For power feed distances 250 to 500 ft. (76 to 152 m), use 12 AWG (25 Metric Wire Gauge), stranded.
 - For power feed distances 500 to 1000 ft. (152 to 305 m), use 10 AWG (30 Metric Wire Gauge), stranded.

2.3.2 Signal wiring

Follow these general precautions for field wiring digital and analog input/output (I/O) lines:

- Metal conduit or cable (according to local code) used for process signal wiring must be grounded at conduit support points, because intermittent grounding helps prevent the induction of magnetic loops between the conduit and cable shielding.
- All process signal wiring should be of a single, continuous length between field devices and the gas chromatograph (GC). If, however, the length of the conduit runs require that multiple wiring pulls be made, the individual conductors must be interconnected with suitable terminal blocks.
- Use suitable lubrication for wire pulls in conduit to prevent wire stress.
- Use separate conduits for AC voltage and DC voltage circuits.

- Do not place digital or analog I/O lines in the same conduit as AC power circuits.
- Use only shielded cable for digital I/O line connections.
 - Ground the shield at only one end.
 - Shield-drain wires must not be more than two American Wire Gauge (AWG) sizes smaller than the conductors for the cable.
- When inductive loads (relay coils) are driven by digital output lines, the inductive transients must be diode-clamped directly at the coil.
- Any auxiliary equipment wired to the GC must have its signal common isolated from earth/chassis ground.

⚠ CAUTION

SIGNAL INTERFERENCE

If you don't follow this precaution, the data and control signals to and from the GC could be adversely affected.

Do not place any loop of extra cable left for service purposes inside the GC purged housing near the conduit entry for AC power.

2.3.3 Grounding precautions

Follow these general precautions for grounding electrical and signal lines:

- For shielded signal conducting cables, shield-drain wires must not be more than two American Wire Gauge (AWG) sizes smaller than the conductors for the cable. Shielding is grounded at only one end.
- Metal conduit used for process signal wiring must be grounded at conduit support points (intermittent grounding of conduit helps prevent induction of magnetic loops between the conduit and cable shielding).
- A single-point ground must be connected to a copper-clad, 10-ft. long, 3/4-in. diameter (3 m long, 19.1 mm diameter) steel rod, which is buried, full-length, vertically into the soil as close to the equipment as is practical.

Note

The grounding rod is not furnished.

- Resistance between the copper-clad steel ground rod and the earth ground must not exceed 25 Ohms.
- On ATEX-certified units, the external ground lug must be connected to the customer's protective ground system via 9 AWG (6 mm²) ground wire. After the connection is made, apply a non-acidic grease to the surface of the external ground lug to prevent corrosion.
- The equipment-grounding conductors used between the gas chromatograph (GC) and the copper-clad steel ground rod must be sized according to your local regulations.

2.3.4 Electrical conduit installation precautions

- Conduit cutoffs must be cut at a 90-degree angle. Cutoffs must be made by a cold cutting tool, hacksaw, or by some other approved means that does not deform the conduit ends or leave sharp edges.
- All conduit fitting-threads, including factory-cut threads, must be coated with a metal-bearing conducting grease prior to assembly.
- Temporarily cap the ends of all conduit runs immediately after installation to prevent accumulation of water, dirt, or other contaminants. If necessary, swab out conduits prior to installing the conductors.
- Install drain fittings at the lowest point in the conduit run; install seals at the point of entry to the gas chromatograph (GC) to prevent vapor passage and accumulation of moisture.
- Use liquid-tight conduit fittings for conduits exposed to moisture.

When a conduit is installed in hazardous areas, follow these general precautions for conduit installation:

- All conduit runs must have a fitting, which contains explosion-proof sealing (potting) located within 3 in. (76.2 mm) from the conduit entrance to the explosion-proof housing. The seal should have a minimum IP rating of IP54 or equivalent NEMA®/Type rating on the conduit sealing devices.
- The conduit installation must be vapor tight, with threaded hub fittings, sealed conduit joints and gaskets on covers, or other approved vapor-tight conduit fittings.

WARNING

Failure to observe precautionary signs may result in serious injury or death to personnel.

Observe all precautionary signs posted on the certified explosion-proof equipment. Consult your company's policies and procedures and other applicable documents to determine wiring and installation practices that are appropriate for hazardous areas.

2.3.5 Sample system requirements

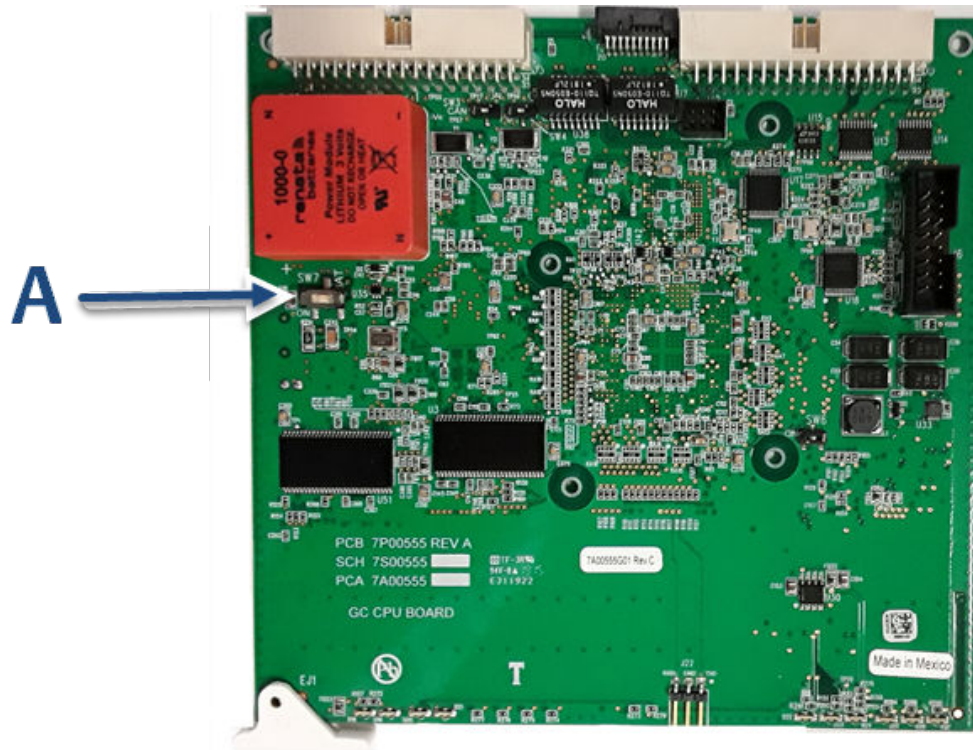
Line length	<p>If possible, avoid long sample lines. In long s, flow sample lines, velocity can be increased by decreasing downstream pressure and using by-pass flow via a fast loop.</p> <p>⚠ CAUTION</p> <p>Stream switching requires a sample pressure of 20 psig (137.9 kPa).</p>
Sample line tubing material	<ul style="list-style-type: none"> • Use sulfur-inert tubing for H₂S streams; for all other applications, use stainless steel tubing. • Ensure tubing is clean and free of grease.
Dryers and filters	<p>Use small sizes to minimize time lag and prevent back diffusion.</p> <ul style="list-style-type: none"> • Install a minimum of one filter to remove solid particles. Most applications require fine-element filters upstream of the gas chromatograph (GC). The GC includes a 2-micron filter. • Use ceramic or porous metallic type filters. Do not use cork or felt filters. <p>NOTICE</p> <p>Install the probe/regulator first, immediately followed by the coalescing filter and then the membrane filter. See Appendix for a recommended natural gas installation.</p>
Pressure regulators and flow controllers	<ul style="list-style-type: none"> • Use stainless steel wetted materials. • Parts should be rated for sample pressure and temperature.
Pipe threads and dressings	<p>Use PTFE tape. Do not use pipe thread compounds or pipe dope.</p>
Valving	<ul style="list-style-type: none"> • Install a block valve downstream of sample takeoff point for maintenance and shutdown. • The block valve should be a needle valve or cock valve type, of proper material and packing, and rated for process line pressure.

2.4 Electrical installation

NOTICE

Emerson switches off central processing unit (CPU) boards before shipping to preserve their batteries. Before installing the CPU board, be sure to switch it on..

Figure 2-4: CPU Board



A. SW7 battery power ON

2.4.1 Connect power supply

⚠ WARNING

ELECTRICAL HAZARD

Failure to follow this warning may result in injury or death to personnel or cause damage to equipment.

Ensure that the 24 Vdc input power source is switched Off before connecting the wires.
Ensure that the 24 Vdc power supply is safety extra low voltage (SELV) compliant by suitable electrical separation from other circuits.

⚠ CAUTION

EQUIPMENT DAMAGE

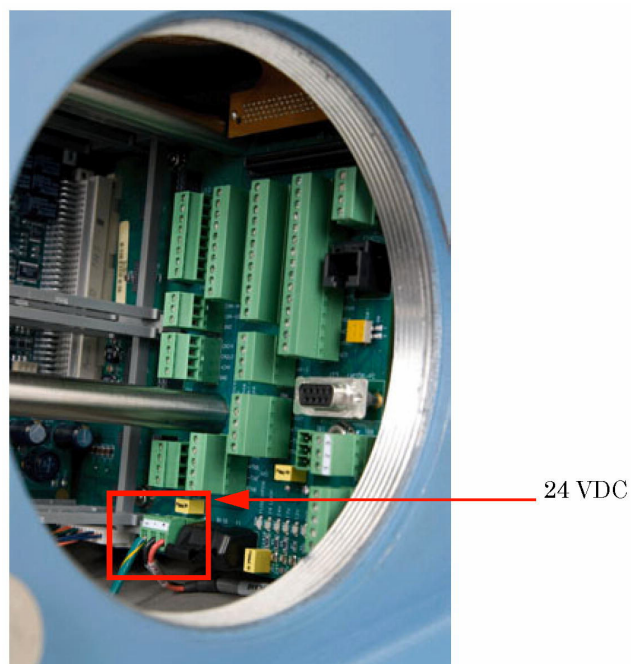
Failure to observe this precaution may damage equipment.

Check the GC prior to wiring to determine if it is equipped for DC power.

Procedure

1. Locate the plug-together termination block inside the electronics enclosure.

Figure 2-5: 24 Vdc power connection on the back plane



2. Bring the two leads in through one of the two possible entries on the lower compartment. Connect to the termination plug provided with the GC.

Figure 2-6: Wiring Entries on the Under Side of the Lower Enclosure



Attribute	Wire Color
+ (positive)	red
- (negative)	black

Note

Do not disconnect the factory-installed ground wire.

The backplane board that connects to the 24 Vdc is protected from lead reversal by the use of blocking diodes.

If the red (+) and black (-) leads are inadvertently reversed, no damage will occur; however, the system will not have power.

3. Connect the DC power leads to the power disconnect switch that should be properly fused.
The recommended fuse size is 8 amps.

2.4.2 Connect optional AC/DC power converter

⚠ WARNING

Failure to follow this warning may result in injury or death to personnel or cause damage to equipment.

Check the gas chromatograph (GC) prior to wiring to determine if it is equipped for optional AC power.

Procedure

1. Locate the plug-together termination block inside the electronics enclosure, atop the power supply and adjacent to the card cage.

Figure 2-7: AC/DC Termination Block



⚠ WARNING

Failure to follow this warning may result in injury or death to personnel or cause damage to equipment.

Do not connect the AC power leads without first ensuring that the AC power source is switched **Off**.

⚠ CAUTION

Failure to observe this precaution may cause damage to equipment.

Do not apply electrical power to the GC until all interconnections and external signal connections have been verified and proper grounds have been made.

AC wiring is usually color coded as:

Label	Wire color
Hot (H)	Brown or black
Neutral (N)	Blue or white

Label	Wire color
Ground (G)	Green with yellow tracer or green

2. Bring the power leads in through the left entry on the bottom of the enclosure.
3. If necessary at remote locations, connect the GC chassis ground wire to an external copper ground rod.
See [Grounding precautions](#) regarding electrical and signal grounding.

2.4.3 Connect gas lines

Procedure

1. Remove the plug from the 1/16 in. sample vent tubing marked **SV1** that is located on the flow panel assembly.
 - If desired, connect the sample vent lines to an external, ambient pressure vent. If the vent line is terminated in an area exposed to wind, protect the exposed vent with a metal shield.
 - Use 1/4-in. or 3/8-in. tubing for vent lines longer than 10 ft. (3 m).

At this stage in the installation, the measure vent (**MV**) lines (labeled on the side of the gas chromatograph [GC]) should remain plugged until the GC has been checked for leaks. For regular operation, however, the **MV** lines must be unplugged.

Note

Do not discard the vent line plugs. They are useful when leak-checking the GC and its sample or gas line connections.

2. Connect the carrier gas to the GC. The carrier gas inlet is labeled **Carrier In** and is a 1/4-in. T-fitting.

⚠ WARNING

EXPLOSION HAZARD

Failure to follow this warning may result in injury or death to personnel.

Do not turn on sample gas until you have completely checked the carrier lines for leaks.

- Use stainless steel tubing to convey carrier gas.
 - Use a dual-stage regulator with high-side capacity of 3,000 psig (20,684.3 kPa) and low-side capacity of 150 psig (1,034.2 kPa).
 - Carrier gas is fed from two bottles (see [Carrier gas installation and maintenance](#)) for carrier gas plumbing.
3. Connect calibration standard gas to the GC.
When installing the calibration standard gas line, ensure that the correct tubing connection is made.

- Use 1/8-in. stainless steel tubing to connect calibration standard gas unless the application requires treated tubing.
 - Use a dual-stage regulator with low-side capacity of up to 30 psig (206.8 kPa).
4. Connect sample gas stream(s) to the GC.
- Use 1/8-in. stainless steel tubing, as appropriate, to connect sample gas.
 - Unless stated otherwise in the product documentation, ensure that the pressure of the calibration and sample line is regulated at 15 psig to 20 psig (103.4 to 137.9 kPa).

Postrequisites

After all lines have been installed, proceed with leak-checking the carrier and sample lines. See [Leak checking and purging for first calibration](#).

2.4.4 Maximum effective distance by communication protocol type

The table below lists the maximum distance at which the indicated protocol can transmit data without losing effectiveness. If longer runs are required, the use of a repeater or other type of extender will be necessary to maintain the protocol's efficiency.

Communication protocol	Maximum distance
RS-232	50 ft. (15.24 m)
RS-422/RS-485	4,000 ft. (1,219.2 m)
Ethernet (CAT5)	300 ft. (91.44 m)

2.4.5 RS-485 serial port terminating resistors

To ensure correct communication with all hosts, place a 120-ohm terminating resistor across the GC serial port terminals on the RS-485 link. On a multi-dropped link, install the terminating resistor on the last controller link only.

2.4.6 Connect directly to a personal computer (PC) using the gas chromatograph's (GC's) Ethernet1 port

Procedure

1. Plug one end of the Ethernet cable into the PC's Ethernet port and the other end into the GC's RJ45 socket on the backplane.
2. Locate switch at **SW1** on the backplane. Place SW1 in the **On** position.

Note

The GC can be connected (or remain connected) to the local network on Ethernet2 on the backplane while the DHCP feature on Ethernet1 is being used.

This starts the GC's DHCP server feature. The server typically takes approximately 20 seconds to initialize and start up.

3. Wait for 20 seconds and then do the following to ensure that the server has provided an IP address to the PC:
 - a) From the PC, go to **Start → Control Panel → Network Connections....**
The **Network Connections** window lists all dial-up and local area network (LAN)/high-speed Internet connections installed on the PC.
 - b) In the list of LAN / high speed Internet connections, find the icon that corresponds to the PC-to-GC connection and check the status that displays beneath the Local Area Connection.
It should show the status as **Connected**. The PC is now capable of connecting to the GC. See [Connect to the gas chromatograph \(GC\) using MON2020](#).
If the status is **Disconnected**, it may be that the PC is not configured to accept IP addresses; therefore, do the following:
4. Right-click the **Properties** icon.
The **Local Area Connection Properties** window displays.
5. Scroll to the bottom of the **Connection** list box and select **Internet Protocol (TCP/IP)**.
6. To configure the PC to accept IP addresses issued from the GC, select the **Obtain an IP address automatically** and **Obtain DNS server address automatically** check boxes.
7. Click **OK** to save the changes and to close the **Internet Protocol (TCP/IP) Properties** window.
8. Click **OK** to close the **Local Area Connection Properties** window.
9. Return to the **Network Connections** window and confirm that the appropriate icon's status reads **Connected**.
If the icon still reads **Disconnected** refer to [Troubleshoot DHCP connectivity issues](#).

NOTICE

If you power cycle the GC, then you will lose connectivity. After the GC initializes completely, refer to [Troubleshoot DHCP connectivity issues](#) to learn how to repair the connection.

2.4.7 Connect to the gas chromatograph (GC) using MON2020

To connect to the GC using the RJ45 Ethernet1 connection, do the following:

Procedure

1. Start MON2020.
The **Connect to GC** window displays.
2. Locate the default **Direct-DHCP** under the **GC Name** column.

This GC directory is created automatically when MON2020 is installed. You can rename the GC, but do not change the IP address that it references, *192.168.135.100*.

3. Click the associated **Ethernet** button.
MON2020 prompts you to enter a user name and password.
4. Enter your user name and password.
5. MON2020 connects you to the GC.

2.4.8 Troubleshoot DHCP connectivity issues

Use the following tips to troubleshoot server connectivity issues:

Procedure

1. Ensure that the gas chromatograph (GC) is up and running.
2. Check that the **SW1** switch is in the **On** position.
3. Check the following connections:
 - a) If you are using a Ethernet straight-through cable, ensure that the personal computer (PC) has an Ethernet network interface card with auto-MDIX.
 - b) If your Ethernet network interface card does not support auto-MDIX, ensure that you are using an Ethernet crossover patch cable.
 - c) Check to see if the GC's central processing unit (CPU) board link lights are on. see [Figure 2-8](#). The three Ethernet1 light-emitting diodes (LEDs) are located on the front bottom edge of the card. If link lights are off, then check your connections. (see [Figure 2-8](#)).

Figure 2-8: CPU Board Link Lights

4. Do the following to ensure that your network adapter is enabled:
 - a) Go to **Start** → **Control Panel** → **Network Connections....**
 - b) Check the status of the *Local Area Connection* icon. If the status appears as **Disabled**, right-click the icon and select **Enable** from the context menu.
5. Do the following to try to repair the network connection:
 - a) **Go to Start** → **Control Panel** → **Network Connections....**
 - b) Right-click the **Local Area Connection** icon and select **Repair** from the context menu.

2.4.9 Connect directly to a personal computer (PC) using the gas chromatograph's (GC's) serial port

The GC's serial port at J23 on the backplane allows a PC with the same type of port to connect directly to the GC. This is a useful feature for a GC that is located in an area without Internet access; all that is needed is a PC running Microsoft Windows®, a notebook computer, and a straight-through serial cable.

To set up the PC for the direct connection, do the following:

Procedure

1. Install the communications cable between two computers:
 - a) Navigate to **Start** → **Control Panel** and select the **Phones and Modem Options** icon.
The *Phones and Modem Options* dialog window displays.

- b) Select the **Modem** tab and click **Add....**
The **Add Hardware Wizard** displays.
 - c) Select the **Don't detect my modem; I will select it from a list** check box and then click **Next**.
 - d) Click **Have Disk**.
The **Install from Disk** dialog window appears.
 - e) Click **Browse**
The **Browse** dialog window displays.
 - f) Navigate to the MON2020 install directory (typically C:\Program Files (x86)\Emerson Process Management\MON2020) and select **Daniel Direct Connection.inf**.
 - g) Click **Open**.
You return to the **Install from Disk** dialog window.
 - h) Click **OK**.
You return to the **Add Hardware Wizard**.
 - i) Click **Next**.
 - j) Select an available serial port and click **Next**.
The **Hardware Installation** dialog window displays.
 - k) Click **Continue Anyway**.
After the driver is installed, you return to the **Add Hardware Wizard**.
 - l) Click **Finish**.
You return to the **Phones and Modems** dialog window. The **Daniel Direct Connect** modem should be listed in the **Modem** column.
2. Start MON2020 and do the following to create a GC connection for the Daniel Direct Connection modem:
 - a) Select **GC Directory** from the **File** menu.
The **GC Directory** window displays.
 - b) Select **Add** from the **GC Directory** window's **File** menu.
A New GC row is added to the bottom of the table.
 - c) Select the **New GC** text and type a new name for the GC connection.
 - d) Select the new GC's **Direct** check box.
 - e) Click the **Direct** button located at the bottom of the **GC Directory** window.
The **Direct Connection Properties** window displays.
 - f) Select **Communications cable between two computers (COM n)** from the **Port** dropdown menu.

Note
The letter *n* stands for the COM port number.

 - g) Select **57600** from the **Baud Rate** dropdown menu.

- h) Click **OK** to save the settings.
You return to the **GC Directory** window.
 - i) Click **OK** to save the new GC connection and to close the **GC Directory** window.
3. Connect one end of the direct connect cable to the GC's serial port at J23 on the backplane.
4. Connect the other end of the direct connect cable to the PC's corresponding serial port.
5. Select **Connect...** from the **Chromatograph** menu.
The **Connect to GC** window displays.
6. Click **Direct** to connect to the GC using the serial cable connection.

2.4.10 Connect directly to a personal computer (PC) using the gas chromatograph's (GC's) wired Ethernet terminal

The Rosemount 700XA has a wired Ethernet terminal at TB11 on the backplane that you can connect to with a static IP address. All that is needed is a PC, typically a notebook computer, and a two-wire, twisted pair, CAT5 Ethernet cable with one of its plugs removed to expose the wires.

Figure 2-9: Crimped CAT5 Cable



Note

The GC can be connected (or remain connected) to the local network on Ethernet2 on the backplane while the DHCP feature is being used.

Procedure

1. Use the following schematics as a guide to wiring the GC via its four wire connector at TB11.
[Figure 2-10](#) shows the traditional wiring scheme. [Figure 2-11](#) shows how to wire a CAT5 cable without the RJ45 plug.

Figure 2-10: Field Wiring to TB11

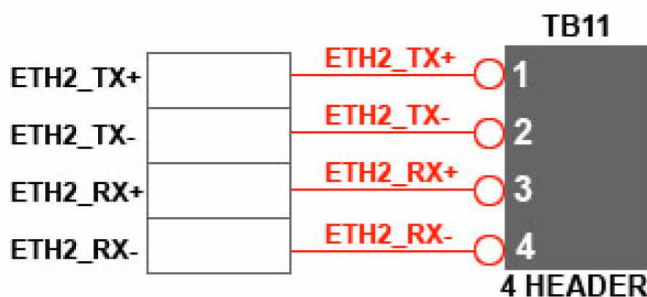
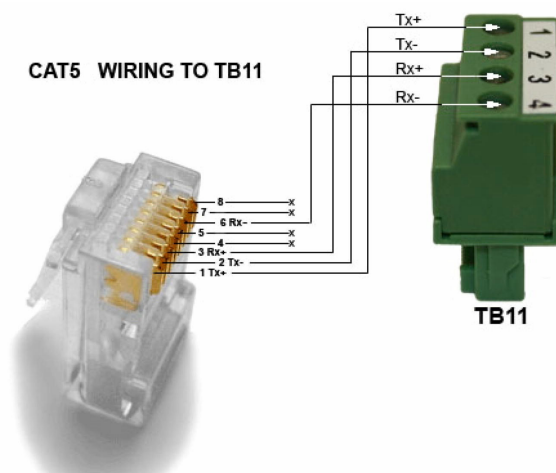


Figure 2-11: CAT5 Wiring to TB11



2. Once you have wired the cable to the Ethernet terminal, plug the other end into a PC or a wall jack.
See [Assign a static IP address to the gas chromatograph \(GC\)](#) to continue configuring the GC.

2.4.11 Assign a static IP address to the gas chromatograph (GC)

Procedure

1. Start MON2020 and log in to the GC using a direct Ethernet connection.
For more information, refer to [Connect directly to a personal computer \(PC\) using the gas chromatograph's \(GC's\) Ethernet1 port](#).
2. Select **Application** → **Ethernet ports...**
The **Ethernet Ports** window displays.
3. Depending upon the Ethernet port to which you want to assign a static IP address, do the following:
 - a) The Ethernet port at TB11: Enter the appropriate values in the **Ethernet2 IP Address**, the **Ethernet 2 Subnet**, and the **Default Gateway** fields.

- b) The RJ45 Ethernet port at J22: Enter the appropriate values in the **Ethernet1 IP Address**, the **Ethernet1 Subnet**, and the **Default Gateway** fields.

Note


See your information technology (IT) staff to obtain IP, subnet, and gateway addresses.

Important

To configure a Ethernet IP address using the local operator interface (LOI), refer to [Figure 9](#).

- 4. Click **OK**.
- 5. Log off the GC.
- 6. Access the backplane, which is located in the GC's enclosure.
- 7. If you are setting up a static IP address for the Ethernet1 port at J22, and you also intend to connect to your company's local area network, do the following:
 - a) Locate , at **SW1** on the backplane.
SW1 is located the Ethernet port at J22 .
 - b)
This disables the DHCP server.
- 8. To connect to the GC, do the following:
 - a) Start MON2020 and select **File** → **GC Directory....**
The **GC Directory** window displays.
 - b) Select **Add**.
MON2020 adds a new GC profile to the end of the table.
- **Note**

You can name the GC's profile as well as add a short description.

- c) Select the new profile and click **Ethernet...** Enter the GC's static IP address in the **IP address** field.
- d) Click **OK**.
The **Ethernet Connection Properties for New GC** window closes.
- 9. Click **Save** to save the new profile.
- 10. Click **OK** to close the **GC Directory** window.
- 11. Select **Chromatograph** → **Connect...** to connect to the GC or click .
The **Connect to GC** window displays. The newly created GC profile should be listed in the table.
- 12. Locate the new GC profile and click the **Ethernet** button that is associated with it.
The **Login** window displays.
- 13. Enter a **User Name** and **User Pin** and click **OK**.

2.4.12 Wiring the discrete digital inputs and outputs

If more than five digital outputs are required, see [Wire a ROC800 digital output \(DO\) module](#) to add the ROC800 Digital Output Module.

Wire the discrete digital inputs

⚠ DANGER

ELECTRIC SHOCK

Failure to observe this precaution will cause serious personal injury or death.

The equipment operates using mains voltage that is dangerous to life. Make sure that the circuit breakers are set to **OFF** and tagged off before

⚠ WARNING

EXPLOSION HAZARD

Failure to de-energize the analyzer may cause an explosion and severely injure personnel.

Do not open the enclosure unless the area is known to be non-hazardous or unless all devices within the enclosure have been de-energized.

To connect digital signal input lines to the GC, see [Engineering drawings](#) and do the following:

Procedure

1. Disconnect power to the analyzer and allow the components to cool for at least five minutes.
2. Open the electronics enclosure door and access the backplane.
3. Make the digital input wiring connections on the backplane at **TB7**.

Note

The discrete digital input terminals on the backplane are self-powered. Devices connected to the digital input will be powered by the gas chromatograph's (GC's) dedicated isolated 24 V power supply.

Note

The discrete digital input terminals are optically isolated from the GC's other circuitry.

4. Route digital in/out (I/O) lines away from the sensitive detector lines (on the left side of the backplane) and away from the analog inputs and outputs.

There are connections for five digital inputs on the backplane at **TB7**, as indicated in the following table.

Table 2-1: Discrete Digital Inputs TB7

TB7	Function
Pin 1	DI1
Pin 2	DI-RTN
Pin 3	DI2
Pin 4	DI-RTN
Pin 5	DI3
Pin 6	DI-RTN
Pin 7	DI4
Pin 8	DI-RTN
Pin 9	DI5
Pin 10	DI-RTN

Wire a ROC800 digital input (DI) module

To connect the ROC800 DI module to a field device, do the following:

Procedure

1. Expose the end of the wire to a maximum length of ¼-in. (6.4 mm).

Note

Twisted-pair cables are recommended for in/out (I/O) signal wiring. The module's terminal blocks accept wire sizes between 12 and 22 American wire gauge (AWG). Allow some slack when making connections to prevent strain.

⚠ CAUTION

Failure to follow this precaution may cause a short circuit and damage equipment. Allow only a minimum exposure of bare wires to prevent short circuits.

2. Insert the exposed end into the clamp beneath the termination screw.
3. Tighten the screw.

Figure 2-12: Typical Wiring

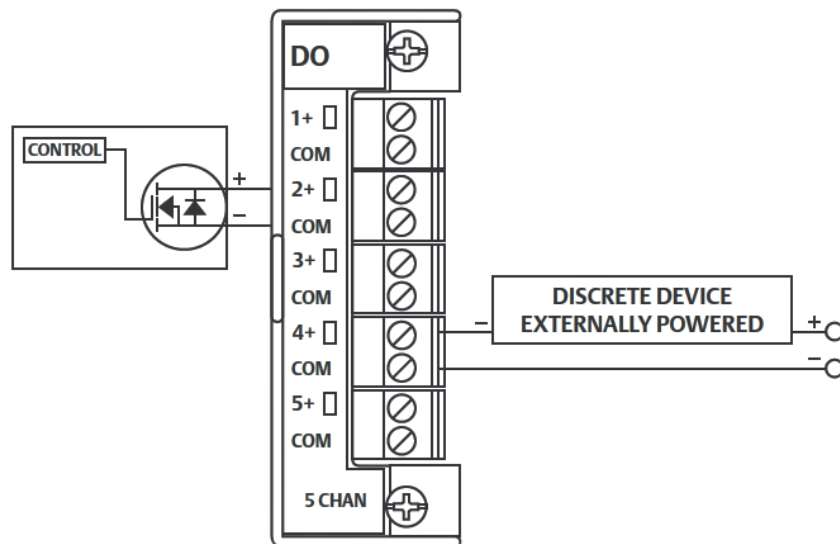


Table 2-2: ROC800 Discrete digital wiring

Terminal	Label	Definition
1	1	CH 1 Positive
2	2	CH 2 Positive
3	3	CH 3 Positive
4	4	CH 4 Positive
5	5	CH 5 Positive
6	6	CH 6 Positive
7	7	CH 7 Positive
8	8	CH 8 Positive
9	COM	Common
10	COM	Common

Wiring the discrete digital outputs

The discrete outputs are located on TB3, which is a 15-pin connector, and have five Form-C relays on the back plane. All contact outputs have a rating of 1A at 30 Vdc.

Table 2-3 lists the discrete digital output function for each pin on the TB3 connector.

Table 2-3: Discrete Digital Outputs - TB3

TB3	Function
Pin 1	NC1 DIG_OUT NC1
Pin 2	ARM1 DIG_OUT ARM1
Pin 3	NO1 DIG_OUT NO1
Pin 4	NC2 DIG_OUT NC2
Pin 5	ARM 2 DIG_OUT ARM2
Pin 6	NO2 DIG_OUT NO2
Pin 7	NC3 DIG_OUT NC3
Pin 8	ARM3 DIG_OUT ARM3
Pin 9	NO3 DIG_OUT NO3
Pin 10	NC4 DIG_OUT NC4
Pin 11	ARM4 DIG_OUT ARM4
Pin 12	NO4 DIG_OUT NO4
Pin 13	NC5 DIG_OUT NC5
Pin 14	ARM5 DIG_OUT ARM5
Pin 15	NO5 DIG_OUT NO5

Note

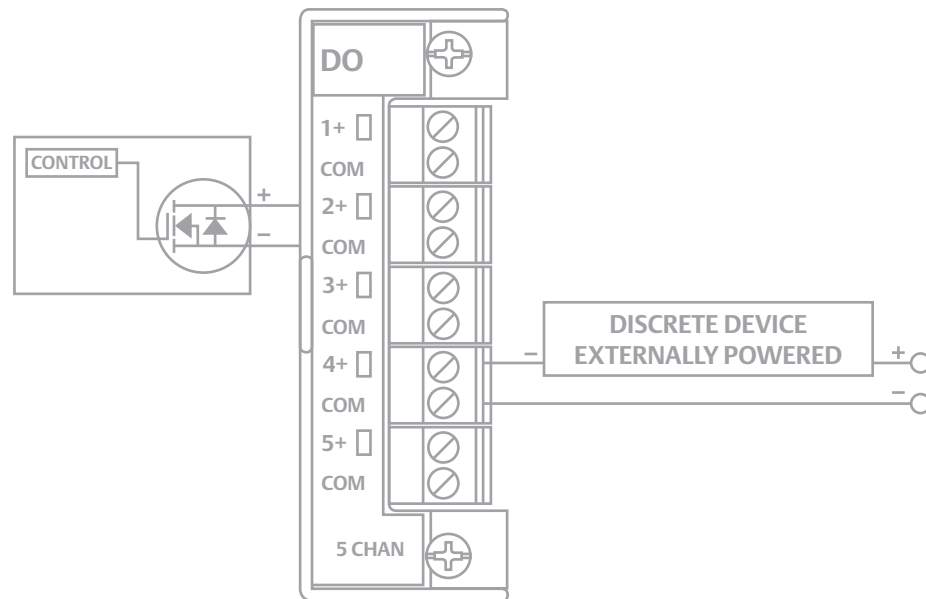
Form-C relays are single-pole double-throw (SPDT) relays that have three positions: normally closed (NC); an intermediate position, also called the *make-before-break* position (ARM); and normally open (NO).

Optional discrete digital inputs (DI)

When plugged into one of the optional card slots in the card cage, the Emerson ROC800 DI card provides eight additional discrete digital inputs. The discrete digital inputs can monitor the status of relays, open-collector or open-drain type solid-state switches, and other two-state devices. For more information, see *ROC800-Series Discrete Input Module* at Emerson's ROC 800-Series website at [Emerson.com/en-us/catalog/emerson-roc800-series](https://emerson.com/en-us/catalog/emerson-roc800-series)

Wire a ROC800 digital output (DO) module

Figure 2-13: Discrete Digital Output Wiring



Terminal	Label	Definition
1	1+	Positive discrete output
2	COM	Discrete output return
3	2+	Positive discrete output
4	COM	Discrete output return
5	3+	Positive discrete output
6	COM	Discrete output return
7	4+	Positive discrete output
8	COM	Discrete output return

Terminal	Label	Definition
9	5+	Positive discrete output
10	COM	Discrete output return

To connect the ROC800 DO module to a field device:

Procedure

1. Expose the end of the wire to a maximum length of ¼ in. (6.4 mm).

Note

Twisted-pair cables are recommended for I/O signal wiring. The module's terminal blocks accept wire sizes between 12 and 22 American wire gauge (AWG). Allow some slack when making connections to prevent strain.

⚠ CAUTION

ELECTRICAL HAZARD

Failure to follow this precaution may cause a short circuit and damage equipment. Allow only a minimum exposure of bare wires to prevent short circuits.

2. Insert the exposed end into the clamp beneath the termination screw.
3. Tighten the screw.

2.4.13 Wiring the analog inputs

All Rosemount 700XA gas chromatographs (GCs) have at least two analog inputs. An additional four analog inputs are available with a ROC800 AI-16 card (see [Wire a ROC800 digital output \(DO\) module](#)) that can be installed into one of the optional slots in the card cage.

Analog inputs on the backplane

There are two analog input connections on the backplane at terminal block 10 (TB10).

Table 2-4: Analog Inputs TB10

TB10	Function
Pin 1	+AI_1
Pin 2	-AI_1
Pin 3	+AI_2
Pin 4	-AI_2

Analog input

Select the input type for an analog input

You can set an analog input to either voltage (0-10 V) or current (4-20 mA) .

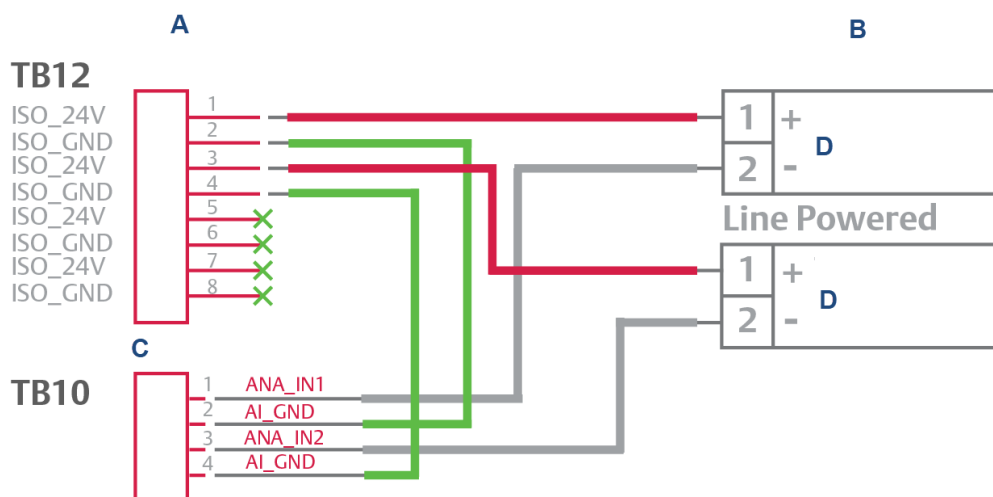
Procedure

1. Select **Hardware** → **Analog Inputs....**
The *Analog Inputs* window displays.
2. Click **Save** to save the changes and keep the window open, or click **OK** to save the changes and close the window.

Typical wiring for line-powered transmitters

The following drawing shows the most common wiring plan for supplying power to two 4-20 mA transmitters, such as pressure sensor transmitters.

Figure 2-14: Typical Wiring for Line-Powered Transmitters



- A. Back plane
B. Customer transmitter
C. Analog inputs
D. Transmitter 4-20 mA output

Optional analog inputs (AI)

When plugged into one of the optional card slots on the card cage, the ROC800 AI-16 card provides four additional analog inputs.

The AI channels are scalable, but are typically used to measure either a 4-20 mA analog signal or a 1-5 Vdc signal. If required, the low end of the AI module's analog signal can be calibrated to zero. For more information, see *Analog Input Modules (ROC800-Series)* at Emerson's [ROC800-Series website](#).

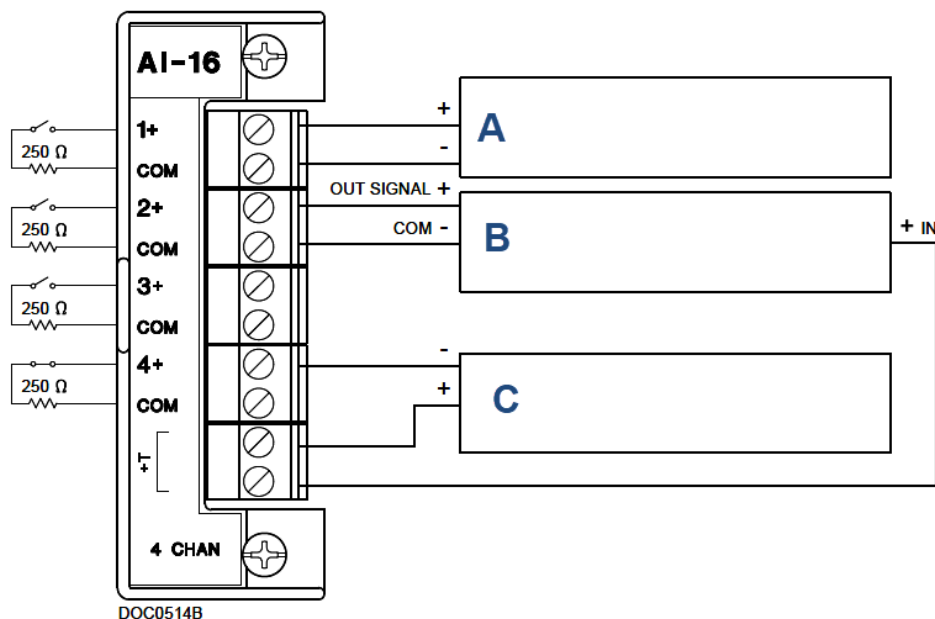
Wire an ROC800 AI-16 module

⚠ CAUTION

ELECTROSTATIC DISCHARGE (ESD)

Operators and technicians must wear an electrostatic wrist strap when handling printed circuit cards to prevent shorting the boards through static electricity.

Figure 2-15: Typical ROC800 Wiring



- A. 1-5 volt device, externally powered
- B. 1-5 volt device, ROC800 powered
- C. Current loop device 4-20 mA, ROC800 powered

To connect the ROC800 AI-16 module to a device:

Procedure

1. Expose the end of the wire to a maximum length of ¼ in. (6.4 mm).

Note

Twisted-pair cables are recommended for in/out (I/O) signal wiring. The module's terminal blocks accept wire sizes between 12 and 22 American wire gauge (AWG). Allow some slack when making connections to prevent strain.

⚠ CAUTION

ELECTRICAL HAZARD

Exposing bare wires may cause a short circuit and damage equipment.

Only allow a minimum exposure of bare wires.

2. Insert the exposed end into the clamp beneath the termination screw.
3. Tighten the screw.

There are two dip switches on the terminal block side of the module that can be used to set a 250 Ω resistor in or out of circuit for each analog input.

To put an analog input's resistor *in circuit*, flip the appropriate dip switch to **I**; to put an analog input's resistor *out of circuit*, flip the appropriate dip switch to **V**.

Calibrate a ROC800 AI-16 module

Prerequisites

To calibrate the ROC800 AI-16 module you must have a personal computer (PC) with the *ROCLINK™ 800 Configuration* software installed and open.

See [Emerson's ROC 800-Series](#) for details, downloads and manuals.

Procedure

1. Go to **Configure** → **I/O** → **RTD Points** → **Calibration**.
2. Select an analog input.
3. Click **Update** to request one value update from the input.
4. Click **Freeze** to stop the values of the input from being updated during calibration.

Note

If you are calibrating a temperature input, disconnect the resistance temperature device (RTD) sensor and connect a decade box or comparable equipment to the RTD terminals of the ROC card.

5. Click **Calibrate**.
6. Enter a value for **Set Zero** after stabilization.
7. Enter a value for **Set Span** after stabilization.
8. Enter values for up to three **Midpoints** one at a time or click **Done** if you are not configuring midpoints.
9. Click **OK** to close the main calibration window and unfreeze the associated inputs.
To calibrate the inputs for another analog input, return to [Step 1](#).

2.4.14 Analog output wiring

The Rosemount 700XA has at least six analog outputs. An additional four analog inputs are available with an ROC800 AO card that can be installed into one of the optional slots in the card cage.

Factory settings for analog output

[#unique_54/unique_54_Connect_42_c_FactorySettingsForAnalogOutputSwitches-fig3-58](#) shows how to wire up to six devices to the analog outputs that are located on the backplane.

Wire customer externally-powered analog outputs

It is possible to furnish power to each analog output while maintaining isolation between channels.

Consult [#unique_55/unique_55_Connect_42_t_WiringAndSwitchSettingsForCustomer-PoweredAnalogOutputs-fig3-60](#) before wiring a customer-powered device:

Procedure

Use [#unique_55/unique_55_Connect_42_t_WiringAndSwitchSettingsForCustomer-PoweredAnalogOutputs-fig3-60](#) to provide power wiring to each analog output while maintaining isolation between channels.

Optional analog outputs

When plugged into one of the optional card slots on the card cage, the ROC800 AO card provides four additional analog outputs. Each channel provides a 4 to 20 mA current signal for controlling analog current loop devices.

For more information, see Emerson's [ROC 800-Series website](#).

Connect ROC800 analog output (AO) module to a field device

Procedure

1. Expose the end of the wire to a maximum length of ¼ in. (6.4 mm).

Note

Emerson recommends using twisted-pair cables for in/out (I/O) signal wiring. The module's terminal blocks accept wire sizes between 12 and 22 American wire gauge (AWG). Expose minimal bare wire to prevent short circuits. Allow some slack when making connections to prevent strain.

2. Insert the exposed end into the clamp beneath the termination screw.
3. Tighten the screw.
4. Close the electronics enclosure door and apply power to the gas chromatograph (GC).
5. Run MON2020 and connect to the GC.

2.4.15 Configure analytical train

Use the Analytical Train Configuration window for multiple analysis clocks to assign the valve, digital outputs (DO), and detectors to each train and then assign each train to its respective analysis clock.

Procedure

1. Assign the usage of valves and DO to Analyzer# on **Hardware** → **Valves, Hardware** → **Detectors** and **Hardware** → **Discrete Outputs** screens.
2. Open the **Application** → **Analytical Train Configuration** screen.
3. Click **Discrete Output** and **Valves**. Assign the respective DOs, valves, and detectors to each analytical train.
The valves and DOs are assigned with Usage as **Analyzer#** displayed on this screen. All available detectors are also displayed on this screen. You cannot configure the same detector, valve or DO to multiple trains.
4. On the **Application** → **Timed Event** screen, filter the configured events as per train selection by selecting the **Train#** checkbox.

2.4.16 Configure analysis clock

Use this feature to configure a single analysis or multiple analyses.

One analysis can be considered as one virtual gas chromatograph (G) that has independent **Sample Loop**, **Analytical Path**, and **Timed Event** tables.

Multiple analyses can run independently to analyze multiple streams at the same time. The number of analyses are set at factory per the mechanical configurations.

Mechanical configurations	Description
Trains 1 - 6	The configured trains that are used by the analysis
Default Stream Sequence	Sets the default sequence to be used by the indicated analysis during auto-sequencing. To create a new stream sequence or to edit an already-created sequence, click Stream Sequence .
Purge Duration	The amount of time, in seconds, to purge the stream before starting an analysis, calibration, or validation run. The default value is 60 SEC . Purging allows sample gas to flow through the sample loop prior to beginning the run.

Mechanical configurations	Description
Energy Value Check	<p>If enabled, the GC analyzes the calibration gas as an unknown stream and computes its energy value. The GC then compares this value to the <i>Cal Gas Cert CV</i> and determines if the calibration gas's energy value is within the CV Check Allowed Deviation. If it isn't, the GC triggers the Energy Value Invalid alarm. The following conditions must be met before the GC can perform a EV Check:</p> <ul style="list-style-type: none">• The EV Check flag in the System window must be enabled.• At least one stream must be set up in the Streams window as a calibration stream, and the Auto flag for this stream must be enabled. <p>The EV Check is performed under any of the following circumstances:</p> <ul style="list-style-type: none">• During a warm start that follows a power failure during normal operation. The GC waits for the heater and electronic pressure controller to reach their respective set points and stabilize. It then analyzes the calibration gas as an unknown stream and identifies the peaks. If all the component peaks are identified, the GC computes the calibration gas' energy value and performs the EV Check.• After a successful calibration, the GC computes the gas' energy value with the new response factors and performs the EV Check

1. Press **Insert** to add a new analysis.
2. Press **Delete** to delete an analysis.

Related information

[Configure analytical train](#)

2.5 Leak checking and purging for first calibration

⚠ CAUTION

EQUIPMENT DAMAGE

Failure to clean and dry the tubing may compromise the integrity of the analyzer or its warranty.

Make sure all tubing is clean and dry internally.
Prior to installation, blow the tubing free of internal moisture, dust, or other contaminants.

Verify that all electrical connections are correct and safe and then turn the gas chromatograph (GC) on.

2.5.1 Check the gas chromatograph (GC) for leaks

Prerequisites

Leak checking carrier and calibration gas lines requires power and a personal computer (PC) connected to the GC.

Note

Refer to the analyzer's drawing documentation package that shipped with the GC for leak checking and identifying vents.

Emerson tested the GC and fittings for leaks at the factory prior to shipment.

Procedure

1. Plug the measure vent (labeled **MV**) vent line if it is open.
Leave the **SV** or sample vent line open or unplugged.
2. Slowly pressurize each line in turn; then block-in the line, making sure the pressure holds.
For example, the carrier gas line should be slowly brought up to 100 psig (689.5 kPa) \pm two percent with the dual-stage regulator at the carrier gas cylinder, and the actuation pressure should be 100 psig (689.5 kPa) maximum.
3. After two minutes, shut the carrier gas bottle valve and observe the high side regulator gauge on the carrier gas bottle.
 - a. The gauge should not bleed down more than 100 psig in ten minutes.
 - b. If helium is lost at a faster rate, leaks are usually found between the carrier gas bottle and the analyzer. Check and tighten all connections, as well as the dual-stage regulator.
4. When the leak check is complete, reopen the helium bottle valve. Remove the plug from the **MV** line.
5. Shut the metering valve below the rotameter on the front of the flow panel.
Leave the metering valve shut for now; you will reopen it later during initial purging and the analyzer's first calibration.
6. Repeat the procedure with sample gas and stream gas.

Note

Do not use a liquid leak detector, such as Snoop[®], on the valves or components in the oven.

Note

Refer to the *Flow Configuration* schematic in the documentation packet that shipped with the GC for detailed instructions on plugging the flame ionization detector (FID) and flame photometric detector (FPD) vents..

2.5.2 Plugged lines, columns, and valves

If the lines, columns, or valves are plugged, check the gas flow at valve ports.

For a reference, use the flow diagram in the drawing package that shipped with your gas chromatograph (GC), and remember these points about flow diagrams:

- Port-to-port flow paths are indicated by solid or dashed lines on the valve symbol in the drawing.
- A dashed line indicates flow direction when the valve is **On**, i.e., energized.
- A solid line indicates flow direction when the valve is **Off**, i.e., not energized.

2.5.3 Purge carrier gas lines

Prerequisites

Purging carrier and calibration gas lines requires power and a personal computer (PC) connected to the gas chromatograph (GC).

Procedure

1. Ensure that the vent line plugs have been removed and the vent lines are open.
2. Ensure that the carrier gas bottle valve is open.
3. Set the GC side of the carrier gas to 115 psig (792.9 kPa).
4. Turn on the GC and the PC.
5. Start MON2020 and connect to the GC.

NOTICE

Consult the MON2020 Software for Gas Chromatographs Reference Manual for information about connecting to a GC.

6. Select **Hardware** → **Heaters....**
The **Heaters** window displays.

Figure 2-16: Heaters Window

	Label	Switch	Setpoint	PID Gain	PID Integral	PID Derivative	Fixed PWM Output	Ignore Warm Start	Heater Type	Temperature	Current PWM	Status
			DEGC				PCT			DEGC	PCT	
1	Heater 1	Auto	80.0	15.00	0.05	50		<input type="checkbox"/>	DC	80.0	54.0	Ok
2	Heater 2	Not Used						<input type="checkbox"/>	AC	0.0	0.0	Ok
3	Heater 3	Not Used						<input type="checkbox"/>	AC	0.0	0.0	Ok
4	Heater 4	Not Used						<input type="checkbox"/>	AC	0.0	0.0	Ok
5	Heater 5	Not Used						<input type="checkbox"/>	AC			Not installed
6	Heater 6	Not Used						<input type="checkbox"/>	AC			Not installed
7	Heater 7	Not Used						<input type="checkbox"/>	AC			Not installed
8	Heater 8	Not Used						<input type="checkbox"/>	AC			Not installed

- Allow the GC system temperature to stabilize and the carrier gas lines to become fully purged with carrier gas, which usually takes at least an hour.
The temperature values for the heaters should indicate that the GC is warming up. The **Status** column displays OK.
- Select **Control** → **Auto Sequence...**

For more information about this function, refer to the *MON2020 Software for Gas Chromatographs Reference Manual*.

Note

You can also perform Step 6 through Step 8 with the local operator interface (LOI).

Important

A continuous operation without sample gas for a period of four to eight hours (or overnight) is recommended, during which no changes should be made to the settings described in Step 1 through Step 7.

2.5.4 Purge calibration gas lines

Prerequisites

Purging calibration gas lines requires power and a personal computer (PC) connected to the gas chromatograph (GC).

Procedure

- Ensure that the carrier gas lines have been fully purged and that the sample vent plugs have been removed.
- Close the calibration gas bottle valve.
- Fully open the block valve associated with the calibration gas feed.

Refer to the *MON2020 Software for Gas Chromatographs Reference Manual* for instructions on selecting streams.

4. Open the calibration gas bottle valve.
5. Increase the outlet pressure to 15 psig (103.4 kPa), plus or minus five percent, at the calibration gas bottle regulator.
6. Close the calibration gas bottle valve.
7. Let both gauges on the calibration gas bottle valve bleed down to 0 psig (0 kPa).
8. Repeat [Step 4](#) through [Step 7](#) five times.
9. Open the calibration gas bottle valve.

Note

This applies to vapor calibration standard.

⚠ WARNING

Failure to follow the safety instructions may cause injury to personnel.

Observe all safety precautions defined in the calibration gas Safety Data Sheet (SDS), especially for hazardous locations.

2.6 Start up the system

Procedure

1. For system startup, run a single-stream analysis of the calibration gas.
 - a) Verify the calibration stream is set to **Auto**.
 - b) Use MON2020 to run a single stream analysis on the calibration stream. Once proper operation of the GC is verified, halt the analysis by selecting **Control** → **Halt....**

Note

Example - use the **MON2020** → **Control** → **Single Stream** → **Calibrate** menu path and select the associated analysis stream.

Unless stated otherwise in the product documentation, ensure that the pressure of the calibration and sample line is regulated at 10 to 30 psig (68.9 to 206.8 kPa). 15 psig (103.4 kPa) is recommended.

- c) Validate calibration gas and retention times and run a manual calibration.
 - d) Go to **MON2020** → **Application** → **Component Data** and select the associated stream. Check the **Component Data** table for calibration gas validation information and retention times.
 - e) Go to **MON2020** → **Control** → **Calibration** and select the analysis stream to run a manual calibration. Select the **Purge stream for 60 seconds** checkbox and **Normal** calibration type radio button; then click **OK**.

Refer to the *MON2020 Software for Gas Chromatographs Reference Manual* for more information.

2. Select **Control** → **Auto Sequence...** to start auto sequencing of the line gas stream(s).

Refer to the *MON2020 Software for Gas Chromatographs Reference Manual* for more information.

The gas chromatograph (GC) begins the auto sequence analysis.

A Engineering drawings

A.1 List of engineering drawings - Rosemount 700XA


This addendum contains the following engineering drawings:

- BE-22175 Label Set Field Wiring Card 1 (Sheets 1, 2, and 3)
- DE-22050 Outline and Dimensional Pole, Wall and Floor Mounting Units, 700XA
- CE-22260 Assembly, 6 Port XA Valve, Model 700XA
- CE-22300 Assembly, 10 Port XA Valve, Model 700XA
- DE-22143 (Sheets 1-7) Unit Assembly 700XA GC



NOTES:

1. ELEC. DATA CARDS, 3 CARDS PER SET, LAMINATED WITH 10 MIL LAMINATE, CUSTOM HOLE, TIED MARINE QUALITY CORD 18" WITH A #10 RING TERMINAL TO ATTACH TO MACHINERY. PRINTED ON PHOTO WHITE 29# COLOR PAPER HAMMERMILL, COPIED 2 UP ON 2 SIDES. LAMINATE TO OVERLAP PAPER BY 1/8" (FINAL SIZE 5 9/16" x 5 1/4").
2. USE FULL SIZE PDF FORMAT PRINT OUT AS SOURCE. DO NOT USE TIFF.

SI METRIC	H	05-28-20	GM	ECO-XX-5008114	LB	LB
THIRD ANGLE PROJECTION	G	06-26-18	GM	ECO-XX-5007942	LB	LB
	F	11-24-15	GM	ECO-XX-5007664	EM	RT
	E	9-17-13	GM	ECO-XX-5007462	EM	RT
MATERIAL SEE NOTE 1.	D	7-30-10	HM	ECO-XX-5005811	EM	RT
	C	7-28-08	HM	ECO-XX-5003987	EM	BLB
FINISH SEE NOTE 1.	B	6-04-08	HM	ECO-XX-5003858	EM	BLB
	REV	DATE	DRN	DESCRIPTION	CHKD	APPD
PROJ. FILE NO. - NONE	FILENAME: BE22175H1.dwg, DATE: 05-28-20, TIME: 10:23 A.M.					

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DIMENSIONS PER
ANSI Y14.5
LATEST REVISION

UNLESS OTHERWISE NOTED
ALL DIMENSIONS IN INCHES

DIMENSIONS IN INCHES	
X.XX	±.015
X.XXX	±.005
ANGULAR	±0° 30'
FINISH	200 RA MAX

BREAK ALL SHARP CORNERS TO
.003-.015 RADIUS AND REMOVE
ALL BURRS



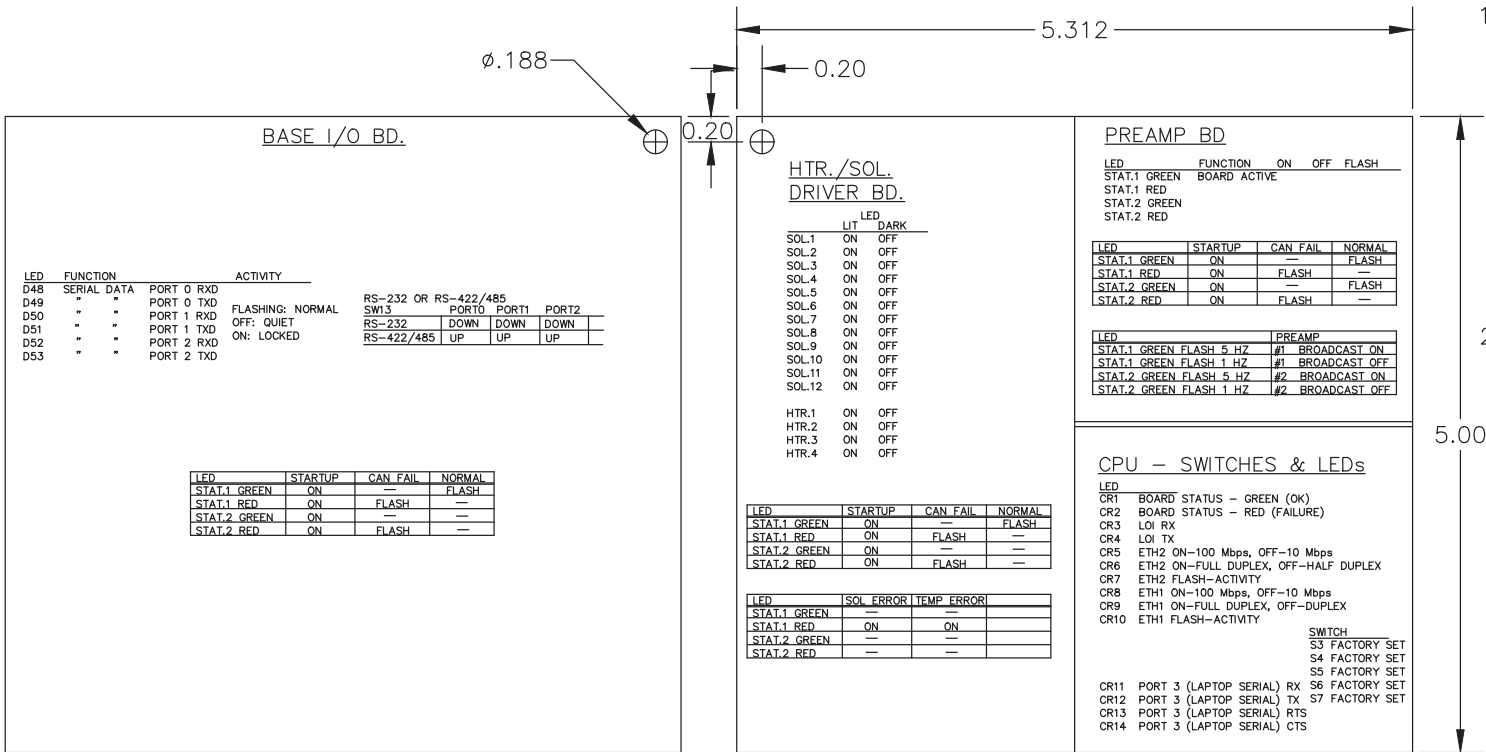
TITLE




LABEL SET
FIELD WIRING
CARD 1
MODEL 700XA

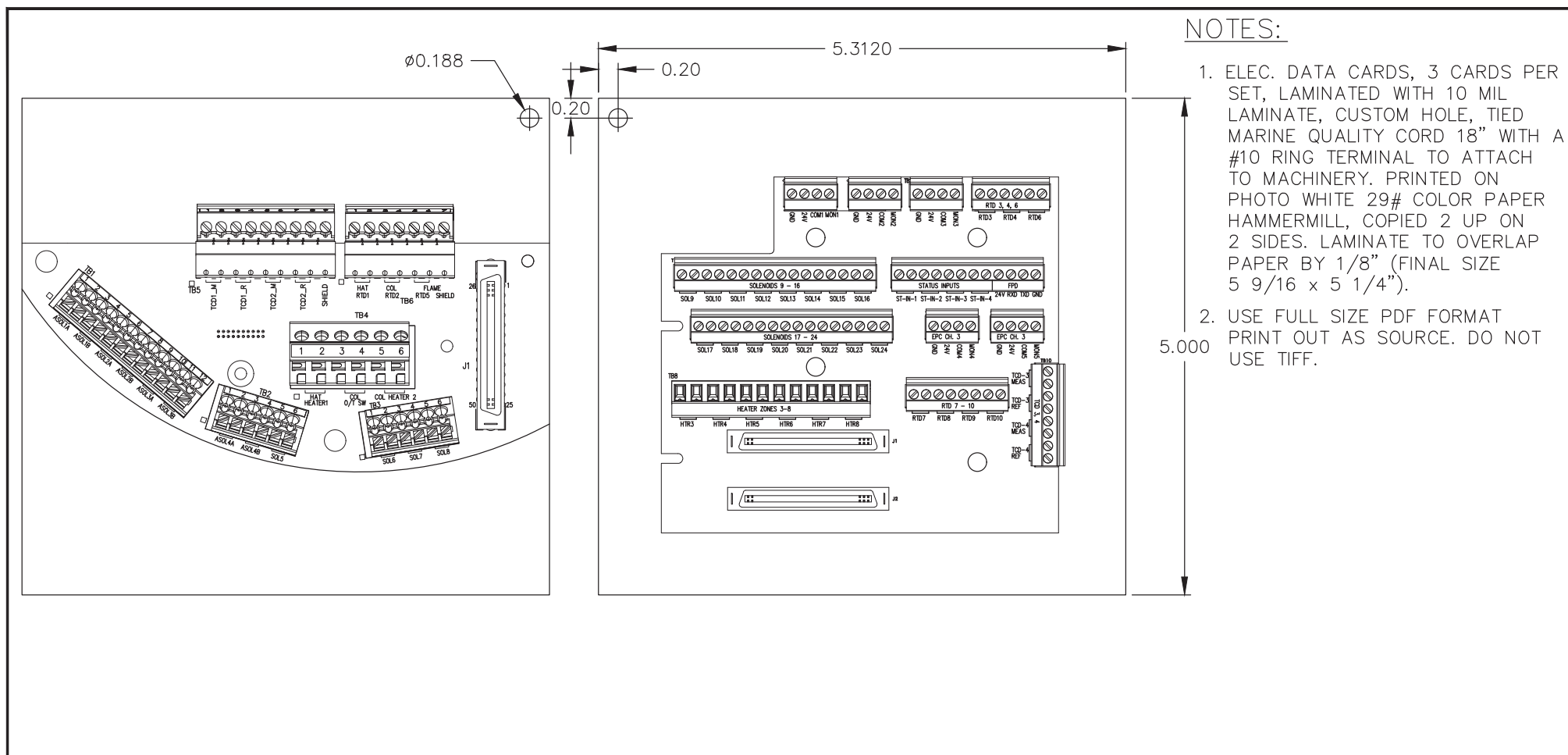
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ENG	BLB	DATE	04/22/08	SCALE	P/N	SHT	1 OF 3
				1:1	2-4-0710-155		

NOTES:

1. ELEC. DATA CARDS, 3 CARDS PER SET, LAMINATED WITH 10 MIL LAMINATE, CUSTOM HOLE, TIED MARINE QUALITY CORD 18" WITH A #10 RING TERMINAL TO ATTACH TO MACHINERY. PRINTED ON PHOTO WHITE 29# COLOR PAPER HAMMERMILL, COPIED 2 UP ON 2 SIDES. LAMINATE TO OVERLAP PAPER BY 1/8" (FINAL SIZE 5 9/16" x 5 1/4").
2. USE FULL SIZE PDF FORMAT PRINT OUT AS SOURCE. DO NOT USE TIFF.






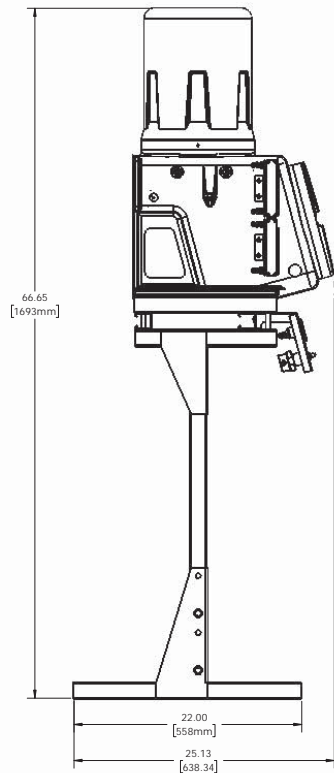
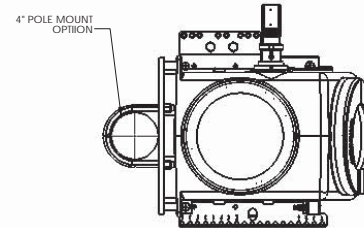
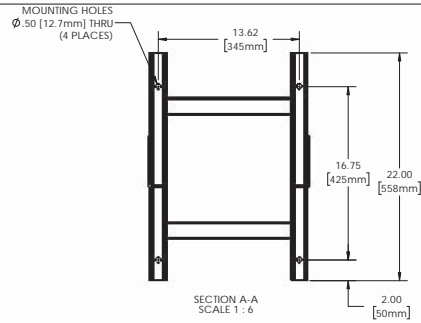
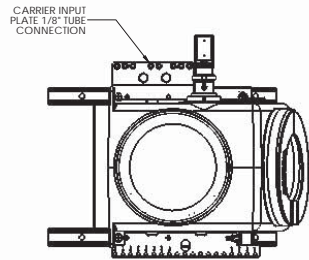
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THIRD ANGLE PROJECTION	G	06-26-18	GM	ECO-XX-5007942	LB	LB	GEOMETRIC TOLERANCES & DIMENSIONS PER ANSI Y14.5 LATEST REVISION				TITLE LABEL SET FIELD WIRING CARD 2 MODEL 700XA								
	F	11-24-15	GM	ECO-XX-5007664	EM	RT													
	E	9-17-13	GM	ECO-XX-5007462	EM	RT													
MATERIAL	D	7-30-10	HM	ECO-XX-5005811	EM	RT	UNLESS OTHERWISE NOTED ALL DIMENSIONS IN INCHES X.XX ±.015 X.XXX ±.005 ANGULAR ±0° 30' FINISH 200 RA MAX												
SEE NOTE 1.	C	7-28-08	HM	ECO-XX-5003987	EM	BLB													
FINISH	B	06-04-08	HM	ECO-XX-5003858	EM	BLB													
SEE NOTE 1.	REV	DATE	DRN	DESCRIPTION	CHKD	APPD	BREAK ALL SHARP CORNERS TO .003-.015 RADIUS AND REMOVE ALL BURRS		DRN		BLB/HM	DATE	04/03/08	DWG NO.		BE-22175		REV	H
									CHKD		EM	DATE	04/22/08						
PROJ. FILE NO.	FILENAME: BE22175H2.dwg, DATE: 5-28-20, TIME: 10:14 A.M.								ENG.		BLB	DATE	04/22/08	SCALE	1:1	P/N	2-4-0710-155	SHT	2 OF 3



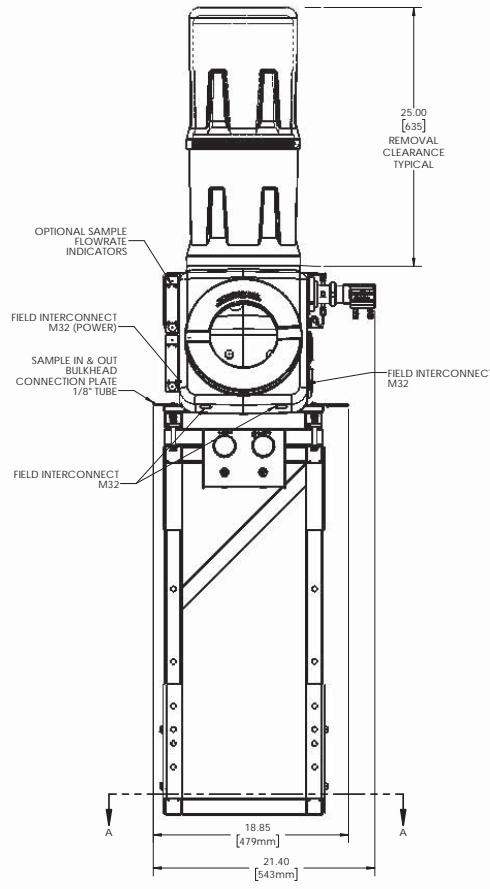
NOTES:

1. ELEC. DATA CARDS, 3 CARDS PER SET, LAMINATED WITH 10 MIL LAMINATE, CUSTOM HOLE, TIED MARINE QUALITY CORD 18" WITH A #10 RING TERMINAL TO ATTACH TO MACHINERY. PRINTED ON PHOTO WHITE 29# COLOR PAPER HAMMERMILL, COPIED 2 UP ON 2 SIDES. LAMINATE TO OVERLAP PAPER BY 1/8" (FINAL SIZE 5 9/16 x 5 1/4").
2. USE FULL SIZE PDF FORMAT PRINT OUT AS SOURCE. DO NOT USE TIFF.

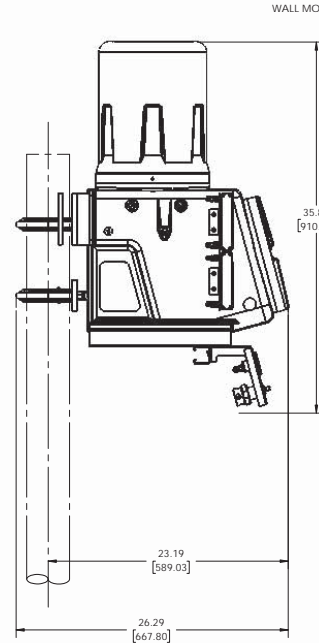
SI METRIC		H	05-28-20	GM	ECO-XX-5008114	LB	LB	THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH OUR WORK. IT SHALL NOT BE REPRODUCED AND SHALL BE RETURNED TO US ON DEMAND. ALL RIGHTS ARE RESERVED.									
THIRD ANGLE PROJECTION		G	06-26-18	GM	ECO-XX-5007942	LB	LB										
		F	11-24-15	GM	ECO-XX-5007664	EM	RT	GEOMETRIC TOLERANCES & DIMENSIONS PER ANSI Y14.5 LATEST REVISION				TITLE LABEL SET FIELD WIRING CARD 3 MODEL 700XA					
		E	9-17-13	GM	ECO-XX-5007462	EM	RT										
MATERIAL		D	7-30-10	HM	ECO-XX-5005811	EM	RT	UNLESS OTHERWISE NOTED ALL DIMENSIONS IN INCHES X.XX ±.015 X.XXX ±.005 ANGULAR ±0° 30' FINISH 200 RA MAX									
SEE NOTE 1.		C	7-28-08	HM	ECO-XX-5003987	EM	BLB										
FINISH		B	06-04-08	HM	ECO-XX-5003858	EM	BLB										
SEE NOTE 1.		REV	DATE	DRN	DESCRIPTION	CHKD	APPD	BREAK ALL SHARP CORNERS TO .003--.015 RADIUS AND REMOVE ALL BURRS		DRN BLB/HM		DATE 04/15/08	DWG NO.	BE-22175	REV	H	
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										ENG BLB		DATE 04/22/08	SCALE 1:1	P/N 2-4-0710-155	SHT 3 OF 3		



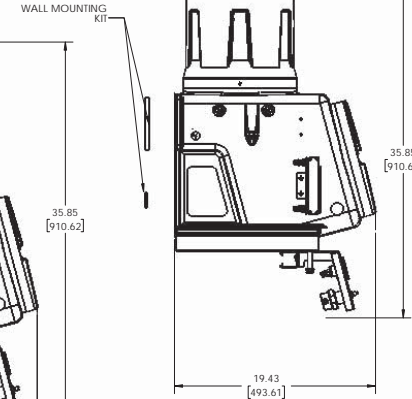
FLOOR MOUNT SIDE VIEW



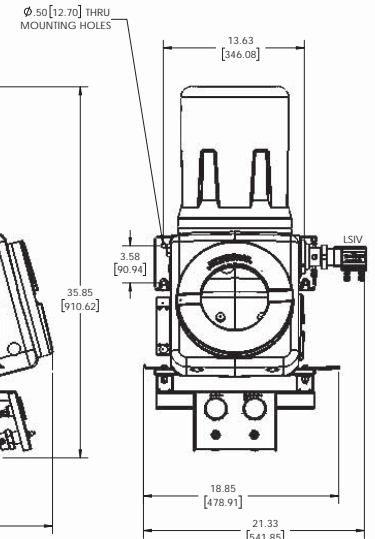
FLOOR MOUNT FRONT VIEW



PIPE MOUNT SIDE VIEW

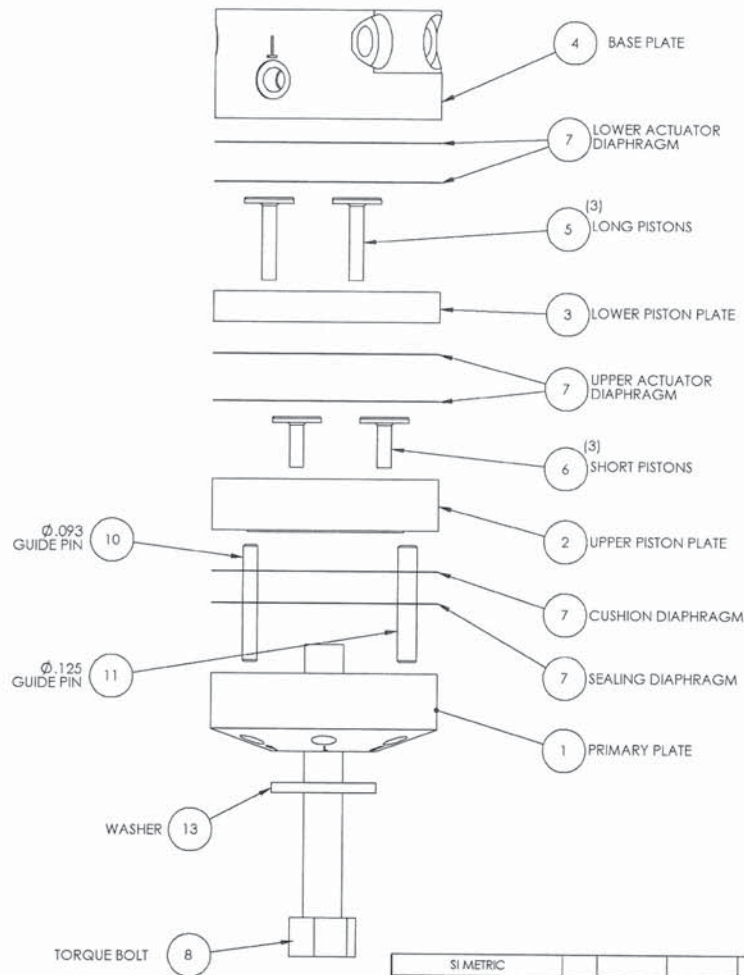


WALL MOUNT SIDE VIEW



WALL MOUNT FRONT VIEW

SI METRIC						THIS DRAWING IS THE PROPERTY OF EMERSON AND IS NOT TO BE REPRODUCED OR USED IN CONNECTION WITH OUR WORK WITHOUT THE WRITTEN PERMISSION OF EMERSON. IT SHALL NOT BE REPRODUCED OR USED IN CONNECTION WITH OUR WORK WITHOUT THE WRITTEN PERMISSION OF EMERSON.										
THIRD ANGLE PROJECTION						GEOMETRIC TOLERANCES & DIMENSIONS FOR THIS Y14.5 LATEST REVISION										
MATERIAL:	D	09/13/18	HM	ADDED DIMENSION	EM	EM	UNLESS OTHERWISE NOTED ALL DIMENSIONS IN INCHES									
	C	11/27/17	HM	REV. STAND HEIGHT	EM	EM										
	B	06/23/10	DLT	ECO-XX-5005738	EM	DLT										
	A	05/28/10	HM	RELEASED	DLT	PN										
FINISH:	REV	DATE	DRN	DESCRIPTION	CHKD	APPD	BREAK ALL SHARP CORNERS TO .003-.015 RADIUS AND REMOVE ALL BURRS									
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						<div> <div> <div>DEW</div> <div>MANCHA</div> <div>CHND</div> <div>ENG</div> </div> <div> <div>DATE</div> <div>05/28/10</div> <div>DATE</div> <div>05/28/10</div> <div>DATE</div> <div>05/28/10</div> </div> <div> <div>DWG NO.</div> <div>DE-22050-001</div> <div>SCALE</div> <div>1:6</div> <div>PIN</div> <div>N/A</div> <div>SHT</div> <div>1 OF 1</div> </div> <div> <div>REV</div> <div>D</div> </div> </div>										



NOTES:

THIS PROCEDURE TO BE PERFORMED IN A CLEAN AND DRY AREA. ALL PARTS TO BE BLOWN CLEAN AND DRY WITH NITROGEN BEFORE ASSEMBLY.

6 PORT XA VALVE ASSEMBLY INSTRUCTIONS

1. Assembly is to be accomplished by building the valve in the upside down position using production fixture.
2. Inspect the primary plate, item #1, to insure that the tubing ports are clean and that the sealing surface has no scratches or pits. Then place it in the fixture with the sealing surface facing up.
3. Insert .125 Dia. guide pin, item #11, and .093 Dia. guide pin, item #10, in the locating holes in the plate.
4. Place the amber sealing diaphragm (has no holes in the actuating plane) over the guide pins and align.
5. Place the white cushion diaphragm (has same hole pattern as sealing diaphragm in step 4) over the sealing diaphragm and align.
6. Place the upper piston plate, item #2, over the guide pins with the piston recess holes facing up.
7. Load 3 each of the short pistons, item #6, into the recess holes of the plate.
8. Place two amber upper actuator diaphragms (has 3 large holes for long pistons to feed through) over the guide pins and align.
9. Place the lower piston plate, item #3, over the guide pins with the piston recess holes facing up.
10. Load 3 each of the long pistons, item #5, into the recess holes of the plate.
11. Place two amber lower actuator diaphragms over the guide pins and align.
12. Place base plate, item #4 over the guide pins and align.
13. Place washer, item #13, over bolt, item #8, and insert the bolt from the bottom up through the valve assembly, tighten bolt item #8 to 20 Ft. LBS. Remove from fixture and install into Unit.

ITEM NO	PART NUMBER	DESCRIPTION	QTY
1	2-4-0710-232	PRIMARY PLATE (W/O BOSS)	1
2	2-4-0710-233	UPPER PISTON PLATE(WITH BOSS)	1
3	2-4-0710-234	LOWER PISTON PLATE	1
4	2-4-0710-235	BASE PLATE	1
5	2-4-0710-246	LONG PISTONS	3
6	2-4-0710-247	SHORT PISTONS	3
7	2-4-0710-248	DIAPHRAGM KIT	1
8	2-4-9216-060	BOLT, HEX HEAD, 1/4-28 x 1-3/4", L9 ALLOY ZINC-YELLOW	1
10	2-4-0710-169	DIAMETER .093 GUIDE PIN (18-8 SS)	1
11	2-4-0710-170	DIAMETER .125 GUIDE PIN (18-8 SS)	1
13	2-4-1518-047	1/4" FLAT WASHER (18-8 SS)	1

SI METRIC						
THIRD ANGLE PROJECTION						
	D	10/26/09	CC	ECO-XX-5005171	EM	NP
	C	08-3-09	HM	ECO-XX-5004955	EM	NP
	B	07-13-09	HM	ECO-XX-5004881	EM	NP
	A	05-16-09	JDB	ECO-XX-5004744	HVB	HVB/NP
REV	DATE	DRN	DESCRIPTION	CHKD	APPD	
PROJ. FILE NO. - NONE FILE NAME: CE-22260D1.SLDDRW, DATE: 10/26/09, TIME: 2:06 A.M.						

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GEOMETRIC TOLERANCES & DIMENSIONS PER
ANSI Y14.5
LATEST REVISION

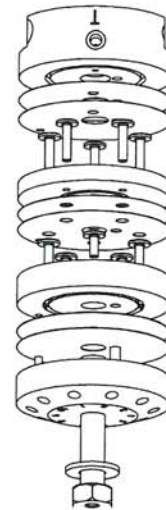
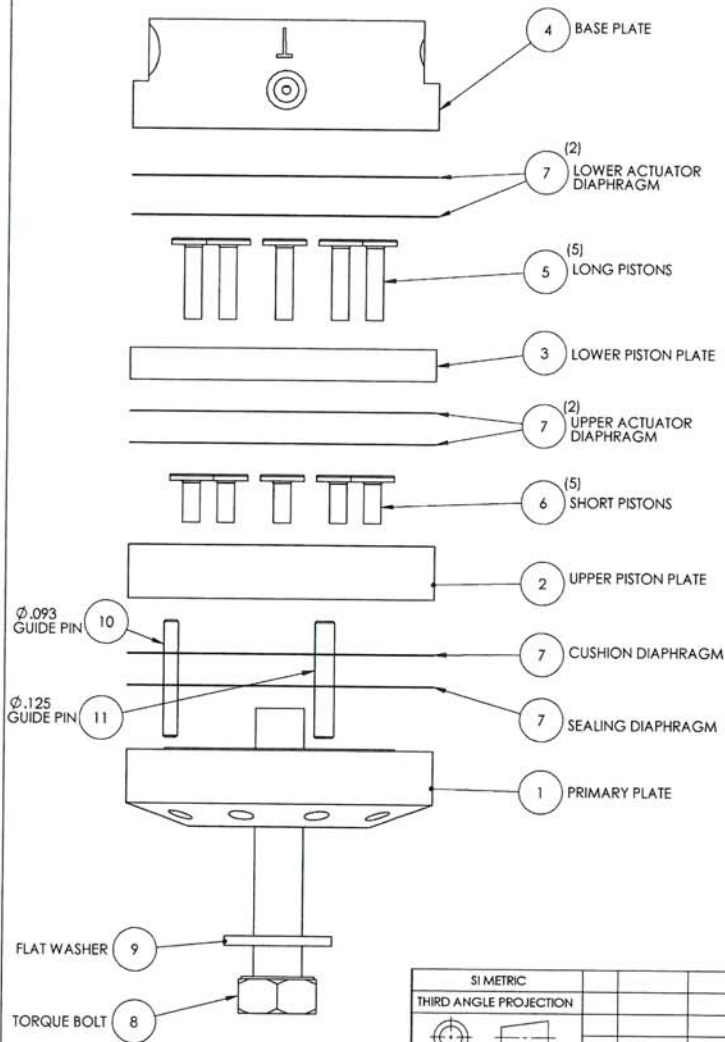
UNLESS OTHERWISE NOTED
ALL DIMENSIONS IN INCHES
DIM INCHES
FRACTIONS
DECIMALS
ANGULAR
DEGREES
MINUTES
SECONDS

BREAK ALL SHARP CORNERS TO
R25-21.6 RADIUS AND REMOVE
ALL BURRS



DRN	JOB	DATE	04/17/09
CHKD	HVB	DATE	04/17/09
APPD	HVB/NP	DATE	04/17/09

TITLE			
ASSEMBLY 6 PORT XA VALVE MODEL 700XA			
DWG NO.	CE-22260		
SCALE	2:1	PIN	2-3-0710-100
SHT	1	OF	1




NOTES:

THIS PROCEDURE TO BE PERFORMED IN A CLEAN AND DRY AREA. ALL PARTS TO BE BLOWN CLEAN AND DRY WITH NITROGEN BEFORE ASSEMBLY.

10 PORT XA VALVE ASSEMBLY INSTRUCTIONS

1. Assembly is to be accomplished by building the valve in the upside down position using production fixture.
2. Inspect the primary plate, Item #1, to insure that the tubing ports are clean and that the sealing surface has no scratches or pits. Then place it in the fixture with the sealing surface facing up.
3. Insert .125 Dia. guide pin, Item #11, and .093 Dia. guide pin, Item #10, in the locating holes in the plate.
4. Place the amber sealing diaphragm (has no holes in the actuating plane) over the guide pins and align.
5. Place the white cushion diaphragm (has same hole pattern as sealing diaphragm in step 4) over the sealing diaphragm and align.
6. Place the upper piston plate, Item #2, over the guide pins with the piston recess holes facing up.
7. Load 5 each of the short pistons, Item #6, into the recess holes of the plate.
8. Place 2 amber upper actuator diaphragms (has 5 large holes for long pistons to feed through) over the guide pins and align.
9. Place the lower piston plate, Item #3, over the guide pins with the piston recess holes facing up.
10. Load 5 each of the long pistons, Item #5, into the recess holes of the plate.
11. Place 2 amber lower actuator diaphragms over the guide pins and align.
12. Place base plate, Item #4 over the guide pins and align.
13. Place washer, Item #9, over bolt, Item #8, and insert the bolt from the bottom up through the valve assembly, tighten bolt Item #8 to 30 Ft. LBS. Remove from fixture and install into Unit.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2-4-0710-058	PRIMARY PLATE CE-22013	1
2	2-4-0710-250	UPPER PISTON PLATE CE-22301	1
3	2-4-0710-251	LOWER PISTON PLATE CE-22302	1
4	2-4-0710-059	BASE PLATE CE-22014	1
5	2-4-0710-246	LONG PISTONS BE-22298	5
6	2-4-0710-247	SHORT PISTONS BE-22299	5
7	2-4-0710-171	DIAPHRAGM KIT	1
8	2-4-9216-177	BOLT, 5/16-24 x 1 3/4" LG.	1
9	2-4-9550-154	WASHER, FLAT STEEL L9 HARD	1
10	2-4-0710-169	Ø.093 GUIDE PIN	1
11	2-4-0710-170	Ø.125 GUIDE PIN	1

SI METRIC							
THIRD ANGLE PROJECTION							
							
MATERIAL: SEE ORDER		C	08-03-09	HM	ECO-XX-5004955	EM	NP
		B	07-13-09	HM	ECO-XX-5004881	EM	NP
		A	05-16-09	HM	ECO-XX-5004745	EM	NP
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PROJ. FILE NO. - NONE		FILE NAME: CE22300C1.SLDDRW, DATE: 08-03-09, TIME: 7:00 A.M.					

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GEOMETRIC TOLERANCES & DIMENSIONS PER ANSI Y14.5 LATEST REVISION

UNLESS OTHERWISE NOTED
ALL DIMENSIONS IN INCHES
X.XX .001
X.XXX .0005
X.XXXX .0001

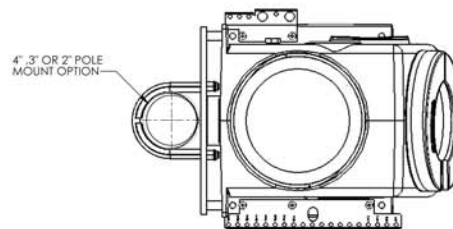
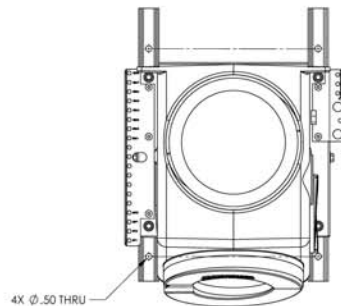
BREAK ALL SHARP CORNERS TO .003-DIS RADIUS AND REMOVE ALL BURRS



DRN: MANCHA DATE: 05/16/09
CHKD: EM DATE: 05/16/09
APPD: NP DATE: 05/16/09

TITLE			
ASSEMBLY 10 PORT XA VALVE MODEL 700XA			
DWG NO.	CE-22300		
SCALE	2:1	PIN	2-3-0710-101
REV	C		
SHEET	1 OF 1		

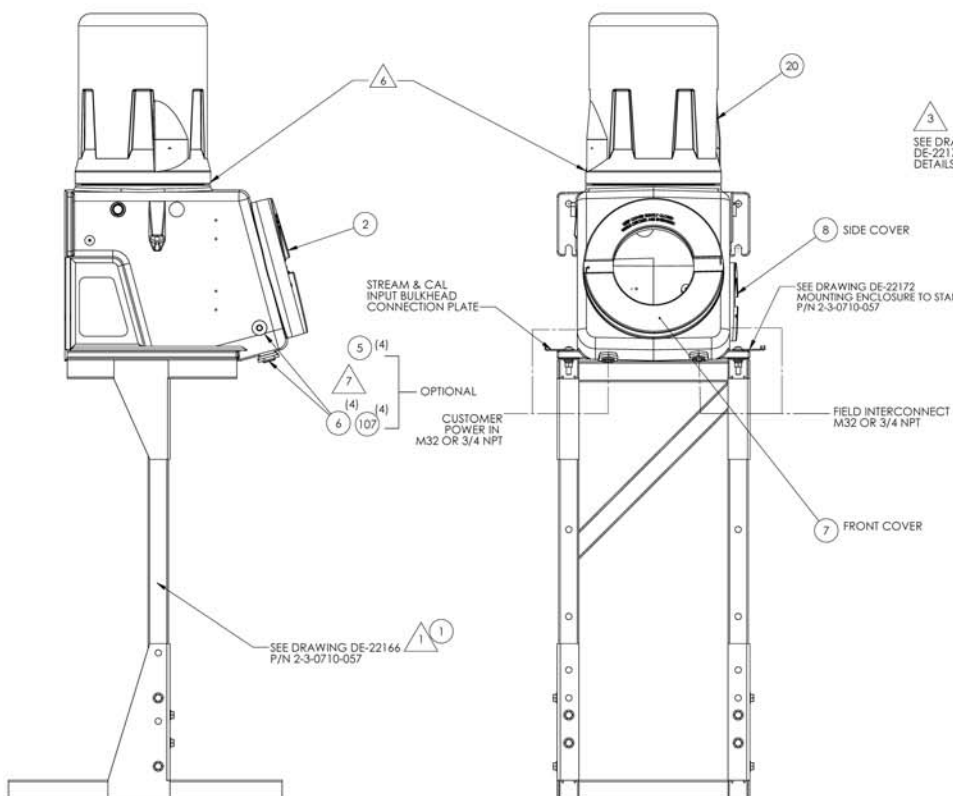
ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	2-3-0710-057	STAND ASSEMBLY DE-22166	1
2	2-4-0710-052	GLASS COVER DE-22006	1
3	2-4-0710-051	DOME COVER MACHINED DE-22003	1
4	2-4-0710-050	SET SCREW	1
5	2-4-9311-224	PLUG, STOPPING M32	SEE BOM
6	2-4-9311-380	M32 OR 3/4" PLUG	SEE BOM
107	2-4-9311-228	STOPPING PLUG, EXT HEX, 3/4 NPT, AL, ATEX	SEE BOM



REVISION HISTORY					
REV	DESCRIPTION	DRAWN	CHECKED	APPROVED	DATE
G	ECO-5007747	NM	JP	NM	2/10/2017
H	ECO-5007971	SB	VR	VR	2/1/2019
J	ECO-5008030	EZ	SB	EZ	12/10/2019

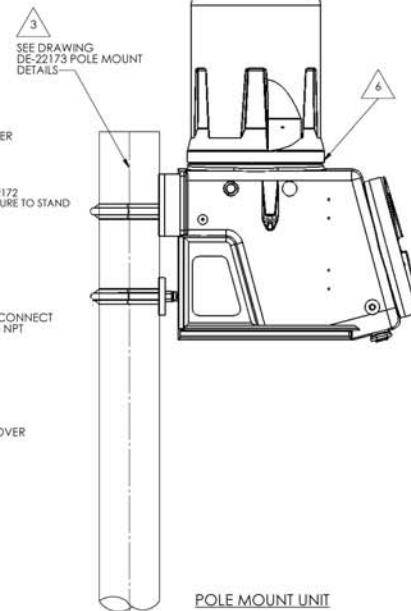
NOTES:

1. ALL UNITS ARE FLOOR MOUNTED FOR ASSEMBLY PURPOSES. ATTACH FLOOR STAND BASE (ITEM 1) TO MAIN UNIT USING HARDWARE PER DRAWINGS DE-22166, DE-22172.
2. ATTACH WALL MOUNT BRACKET PER ASSEMBLY DRAWING DE-22174.
3. PIPE MOUNTING KIT TO BE SHIPPED LOOSE WITH UNIT. SEE DRAWING DE-22173.
4. SEE SAMPLE PLATE DRAWING FOR ASSEMBLY.
5. INSTALL COVERS (ITEM 7.8). ALSO INSTALL SETSCREW TO EACH COVER. BACKUP SETSCREW 1 TURN AFTER IT BOTTOMS OUT.
6. INSTALL DOME USING SILICONE GREASE AS LUBRICANT.
7. INSTALL 2-4-9311-380 (QTY. 4) AND 2-4-9311-228 (QTY. 4) FOR CSA OR 2-4-9311-224 (QTY. 4) FOR ATEX.



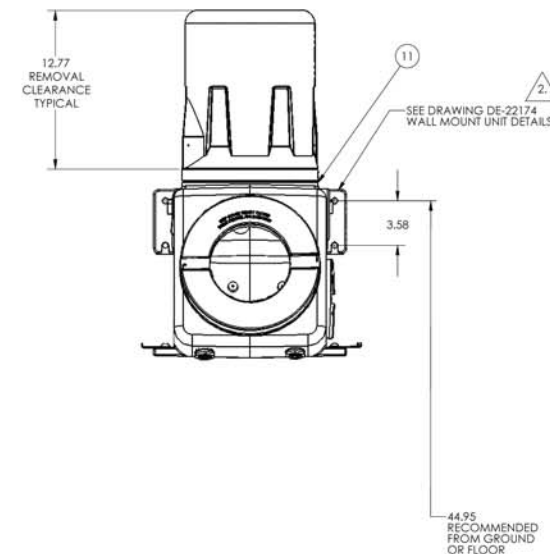
SIDE VIEW FLOOR MOUNT UNIT

FRONT VIEW FLOOR MOUNT UNIT



CERTIFICATION SCHEDULE DRAWING

No modification permitted without prior approval from the certification agency.



FRONT VIEW WALL MOUNT UNIT

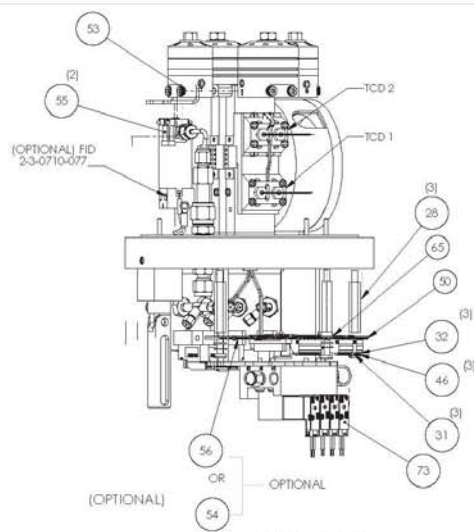
METRIC		THIRD ANGLE PROJECTION		N/A		SEE ORDER	
GEOMETRIC TOLERANCES & DIMENSIONS PER ASME Y14.5 LATEST REVISION UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS		TOLERANCES ARE:		X ± 0.10 mm		XXX ± 0.10 mm	
ANGULAR		X ± 0.10 mm		XXX ± 0.10 mm		ANGULAR	
BREAK ALL SHARP CORNERS TO 10-40 MM RADIUS AND REMOVE ALL BURRS		SCALE		NONE		1 OF 7	



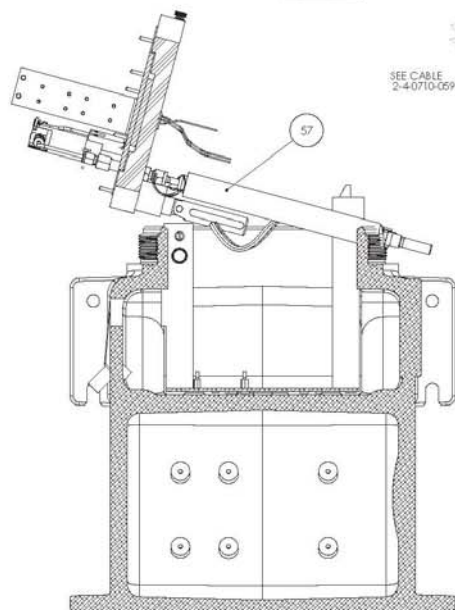
UNIT ASSEMBLY
MODEL 700XA G.C.

DE22143

REV J

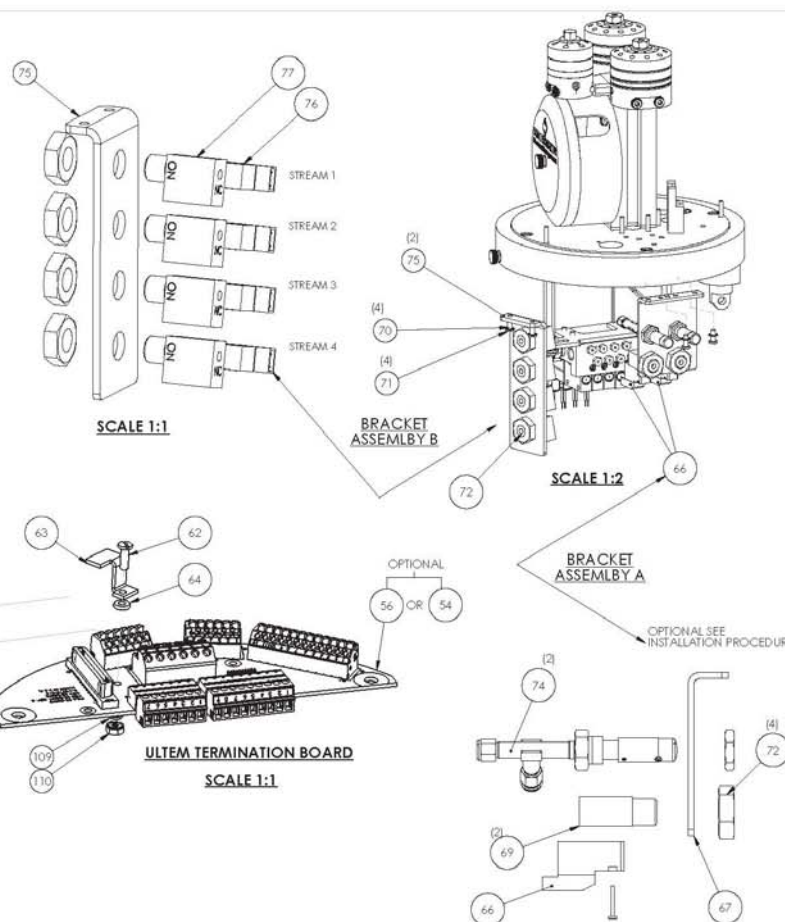


OVEN ASSEMBLY
SCALE 1:2



FOR DETAIL "C"
SEE DWG DE-22113

SECTION B-B
SCALE 1:2.5



ULTEM TERMINATION BOARD
SCALE 1:1

DETAIL "A"

H. INSTALLATION PROCEDURE OF ULTEM TERMINATION BOARD:

1. INSTALL (2) #10-32 STANDOFFS (ITEM 28) TO LOCATION "D" UNDER NEATH ULTEM PLATE (ITEM 7) AS SHOWN IN VIEW "A-A" (ON PAGE 2).
2. INSTALL ULTEM TERMINATION BOARD (ITEM 56 OR 54) AND SHIELD (ITEM 50) TO STANDOFF (FROM STEP 1) USING #10-32 SCREWS (ITEM 31), #10 LOCK WASHER (ITEM 46) AND #10 FLAT WASHER (ITEM 32) AS SHOWN.

K. INSTALLATION PROCEDURE OF SAMPLE SHUTOFF VALVE ASSEMBLY:

1. OPTIONAL & APPLICATION DEPENDENT: INSTALL METERING VALVE (ITEM 74) INTO BRACKET (ITEM 67) IN AN ANGLE 35° AS SHOWN.
2. INSTALL SAMPLE SHUTOFF BLOCK (ITEM 69) TO BRACKET USING NUT (ITEM 72) POSITIONING VALVE PATTERN DOWN WARD AS SHOWN.
3. INSTALL SOLENOID (ITEM 64) USING EXISTING HARDWARE INTO THE SAMPLE SHUTOFF BLOCK (ITEM 69) AS SHOWN.
4. INSTALL COMPLETE SUB-ASSEMBLY OF SAMPLE SHUTOFF (FROM STEPS 1-3) INTO THE BOTTOM OF ULTEM PLATE (ITEM 7) AT THE "E" AND "F" LOCATION (OPTIONAL) USING #6-32 SCREWS (ITEM 71) AND #6 WASHERS (ITEM 70).
5. REFER TO WORK ORDER FOR SPECIFIC # OF VALVES & APPLICABLE DRAWINGS AND PROCEDURES.

L. INSTALLATION PROCEDURE OF STREAM SWITCH ASSEMBLY:

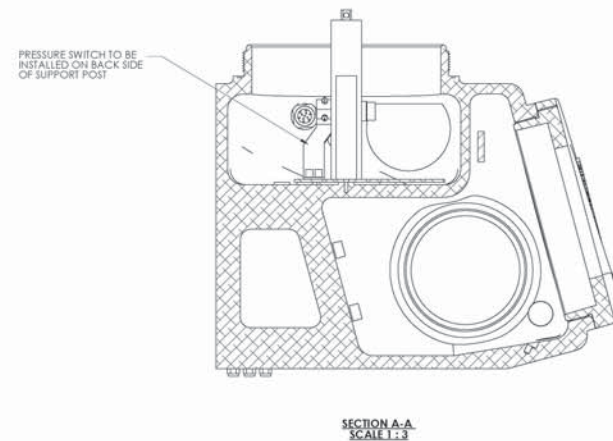
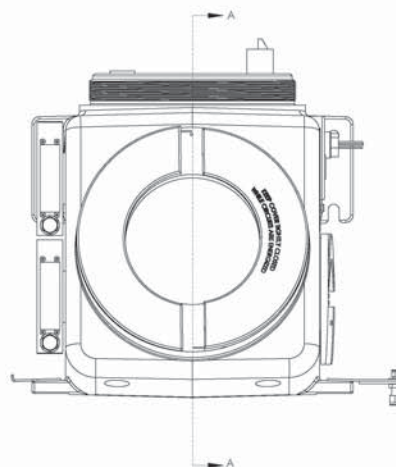
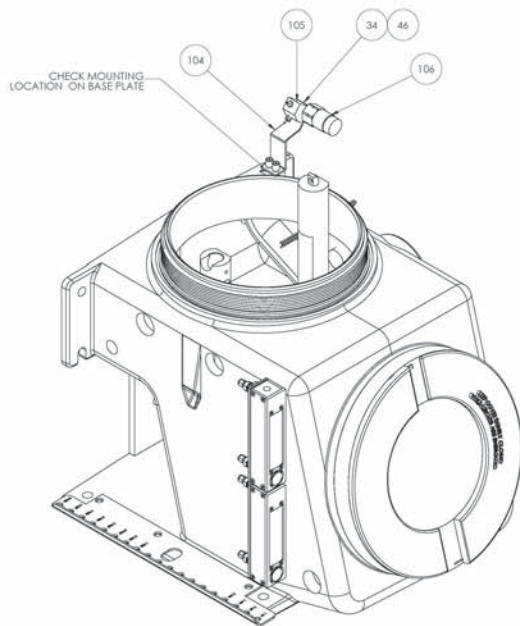
1. FOR BRACKET ASSEMBLY "B" INSTALLATION: INSTALL THREE WAY SSO BLOCK (ITEM 75) INTO BRACKET (ITEM 75) AS SHOWN.
2. INSTALL NC SOLENOID (ITEM 76) TO BLOCK (ITEM 75).

* FOR THE REMAINING PART OF FID ASSEMBLY,
SEE BILL OF MATERIAL 2-3-0710-077

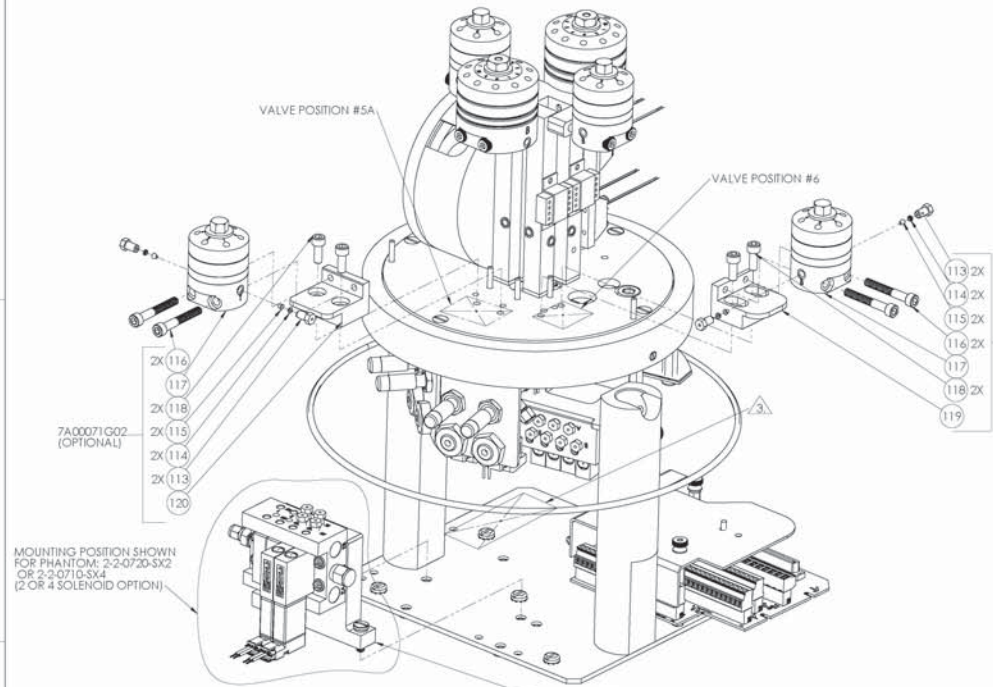
** AS REQUIRED PER APPLICATION (ORDER).
BRACKET ASSEMBLY "A" IS USED FOR SSO.
BRACKET ASSEMBLY "B" IS USED FOR STREAMS SAMPLE.

ITEM NO.	PART NUMBER	DESCRIPTION	Default QTY.
50	2-4-0710-144	PCA PLASTIC COVER BE-22161	1
51	2-4-4000-337	VALCO STEM	1
52	2-4-4000-335	VALCO VALVE	1
53	2-4-0710-068	BRACKET VALCO VALVE BE-22025	1
54	2-3-0710-018	PCA ULTEM BOARD, FID	2
55	2-4-9213-003	SOCKET HD SCREW #6-32 x .5 LG.	2
56	2-3-0710-013	PCA, TCO ULTEM BOARD	1
57	2-3-0710-062	ASSEMBLY, FID COMPLETE W/EXHAUST MODEL 700XA	1
61	2-4-0710-164	WIRE, ASCO VALVE	AR
62	2-4-9202-407	4-40 BH SCREW x .4375 LG.	1
63	2-4-0710-189	CLIP CONNECTOR BE-22212	1
64	2-4-9238-005	BIBRE WASHER FLAT #4	1
65	2-4-9221-160	KEPNUT #10	1
66	2-4-0710-159	ASCO SOL VALVE, NO (ASCO 833-630804)	2
67	2-4-0710-129	BRACKET, SSO, BE-22138	1
68	2-4-9321-554	1/16" TUBE FITTING	2
69	2-4-0710-145	BASE, SSO, NORMALLY OPEN BE-22162	1
70	2-4-9231-062	LOCK WASHER INT TOOTH #6 41035	4
71	2-4-9202-636	M/S BH 35-6-32 x 3/8" LG.	6
72	2-4-9220-251	SOL MOUNTING NUT	4
73	DE-22294	FER ORDER MAC SOLENOID ASSY, DRAWING	AR
74	2-4-9500-041	METERING VALVE	2
75	2-4-0710-201	BRACKET STREAM, BE-22228	1
76	2-4-0710-160	ASCO SOL VALVES, NC (ASCO 833-630805)	AR
77	2-4-0710-147	BASE SOLENOID ARV, BE22164	AR
109	2-4-9230-040	FLAT WASHER STD 18-835 #4	1
110	2-4-9221-070	KEP NUT 4-40 SS	1
50	2-4-0700-137	EXHAUST FITTING BE21335	1

DESIGNED BY	MANCHA	DATE	11/13/07	DWG NO.	DE-22143	REV	J
CHECKED BY	EM	DATE	05/11/09	SCALE	AS SHOWN	SEE ORDER	3 OF 7
ENG	NP	DATE	9/20/08				



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
104	2-4-0710-238	BRACKET PRESSURE SWITCH BE-22238	1
105	2-4-0710-239	ADAPTER, PRESSURE SWITCH BE-22289	1
106	2-4-0710-266	PRESSURE SWITCH	1
22	2-4-0710-110	UNIT NAMEPLATE UNIVERSAL BE-22109	1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
113	2-4-9500-001	TUBING NUT 1/16 SS (VALCO # ZN1)	AR
114	2-4-9500-005	BACK FERRULE 1/16 TUBE SS (SWAGELOK)	AR
115	2-4-9500-006	FRONT FERRULE 1/16 TUBE (SWAGELOK)	AR
116	2-4-9213-922	SCREW, CAP, SOC HD, 10-32 X 1 3/8 LG	AR
117	2-3-0710-100	ASSEMBLY, 6-PORT VALVE, XA	AR
118	2-4-9213-013	SCW,CAP,SOC HD, 10-32 X 1/2	AR
119	7P00387H01	BRACKET, VALVE MOUNTING, TCD POSITION 6, 700XA	AR
120	7P00382H01	BRACKET, VALVE MOUNTING, POSITION 5A/5B, 700XA	AR
121	2-4-0710-174	BRKT.MTG.MNFD MAC VL	AR
122	2-4-9231-100	LOCK WASHER STD #10 18-8 SS	AR
123	2-4-9202-910	M/S SLT BH SS 10-32 X 5/8 LONG	AR
124	2-4-0710-242	MAC SOLENOID VALVE MANIFOLD GC700XA	AR
125	2-4-0710-224	MAC SOLENOID VALVE 44 SERIES	AR
126	2-4-5000-080	PLUG PIPE 1/8 SS, SWAGELOK # SS-2-P	AR
127	2-4-9231-060	LOCK/W SPLIT STD #6 18-BSS	AR
128	2-4-9202-616	M/S SLT BH SS 6-32 X 1 INCH, 19-8 SS	AR
129	2-4-9500-014	CONN MALE 1/16T X 1/8 NPT, SST, SWAGELOK# SS-100-1-2	AR
130	2-4-0710-297	BLANK PLATE #44 SERIES MAC MANIFOLD, 700XA/1500XA	AR
131	2-4-9163-004	O-RING, VIFON, SIZE -004	AR
132	2-4-9321-592	FITTING, PLUG, 1/16 SHORT 31 6SS VALCO ZSP1S6	AR
133	2-4-0700-290	BRK REG 700 STAND	AR
134	2-4-4000-056	BRKT FOR AIR SET REGULATOR	AR
135	2-4-4000-058	NORGREN P/N B07-202	AR
136	2-4-5000-037	CON MALE 1/4T	AR
137	2-4-9167-001	BLIND RIVET 1/8" DIAMETER	AR
138	2-4-9216-210	BOLT HH SS 3/8-16	AR
139	2-4-9220-230	NUT HEX SS 3/8-16	AR
140	2-4-9230-150	WASHER, FLAT 18-BSS	AR
141	2-4-9231-150	LOCK/W STD 18-BSS	AR
142	2-4-9500-013	CON MALE 1/8T X 1	AR
143	2-4-5000-172	TAG "INSTRUMENT AIR"	AR
144	2-4-5000-329	UNISTRUT SPR NUT 3	AR

- (121) AR
- (122) AR
- (123) AR
- (124) AR
- (125) AR
- (126) AR
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- (143) AR
- (144) AR

SEE DRAWING 7A00073 FOR ASSEMBLY DETAILS

SEE DRAWING 7A00072 FOR ASSEMBLY DETAILS

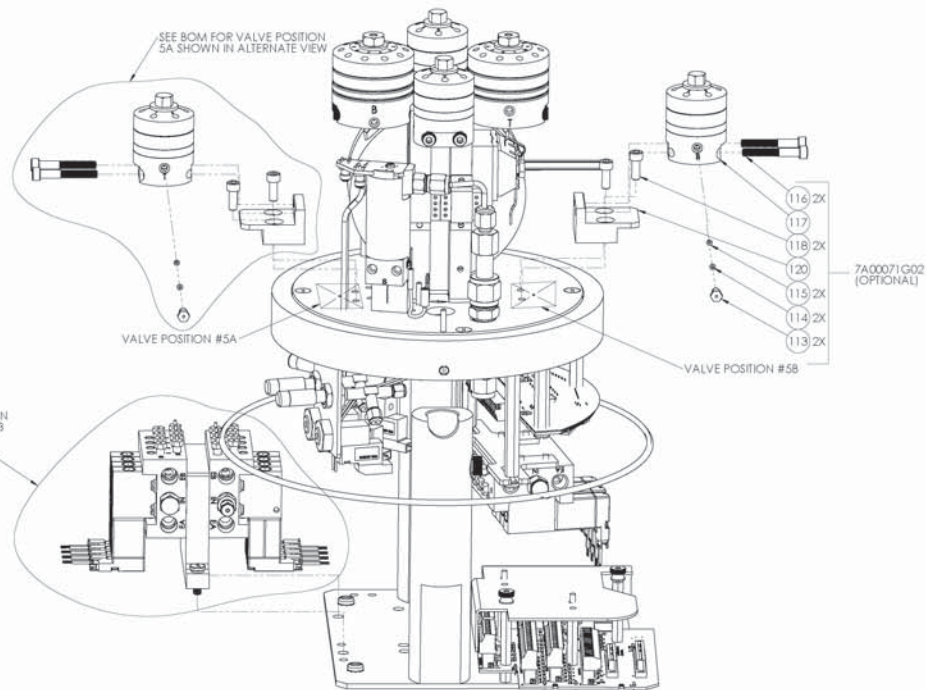
PARTS CONTAINED WITHIN 2-2-0700-990 AIR REGULATOR PHANTOM. INSTALL ACCORDING APPLICATION PLUMBING DIAGRAM AND REGULATOR PANEL SELECTION

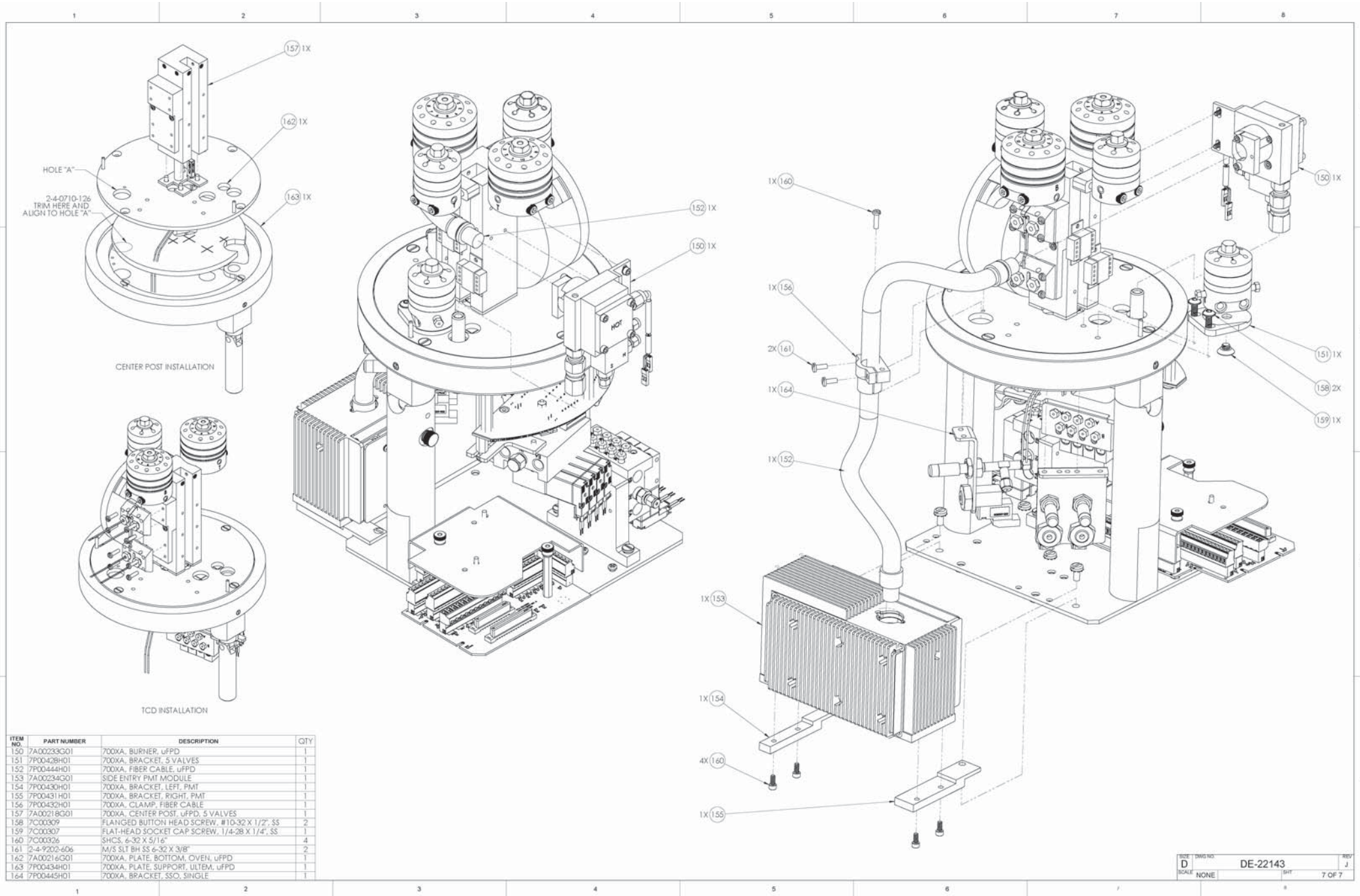
M. INSTALLATION PROCEDURE OF OPTIONAL 5/6 VALVE SELECTIONS

1. INSTALL PARTS AS SHOWN IN VIEW. CONSULT DRAWING 7A00071 AS REQUIRED.
2. POSITION 5A FOR 5/6 VALVE INSTALLATION IS UNIVERSAL.
3. VALVE POSITION #6 IS UNAVAILABLE WHEN FID IS SELECTED OR WHEN VALCO VALVE STEM IS PRESENT (SEE ITEM 51 PAGE 3)
4. POSITION 5B IS UNAVAILABLE WHEN 2 TCD DETECTORS ARE SELECTED AND POSITION 6 SHOULD BE USED UNLESS CONFLICTS EXIST.

N. INSTALLATION PROCEDURE OF OPTIONAL ADDITIONAL SOLENOIDS

1. INSTALL PARTS AS SHOWN IN VIEW. CONSULT DRAWING 7A00072 AND 7A00073 AS REQUIRED.
 2. MOUNTING POSITIONS SHOWN FOR 2, 4 AND 8 SOLENOID OPTIONS. 8 SOLENOID OPTION MUST BE MOUNTED IN ALTERNATE POSITION.
- ⚠ WHEN METHANATOR OPTION IS SELECTED NEITHER MOUNTING LOCATION IS AVAILABLE AND CUSTOM MOUNTING LOCATION MAY BE USED IF NO OTHER INTERFERENCE IS PRESENT. MOUNTING IN ALTERNATE POSITION SHOWN IS NOT AVAILABLE WHEN BOTH METHANATOR AND LIV OPTIONS ARE SELECTED.





ITEM NO.	PART NUMBER	DESCRIPTION	QTY
150	7A00233G01	700XA, BURNER, UFPD	1
151	7P00428H01	700XA, BRACKET, 5 VALVES	1
152	7P00444H01	700XA, FIBER CABLE, UFPD	1
153	7A00234G01	SIDE ENTRY PMT MODULE	1
154	7P00430H01	700XA, BRACKET, LEFT, PMT	1
155	7P00431H01	700XA, BRACKET, RIGHT, PMT	1
156	7P00432H01	700XA, CLAMP, FIBER CABLE	1
157	7A00218G01	700XA, CENTER POST, UFPD, 5 VALVES	1
158	7C00309	FLANGED BUTTON HEAD SCREW, #10-32 X 1/2", SS	2
159	7C00307	FLAT-HEAD SOCKET CAP SCREW, 1/4-28 X 1/4", SS	1
160	7C00326	SHCS, 6-32 X 5/16"	4
161	2-4-9202-406	M/S SLT BH SS 6-32 X 3/8"	2
162	7A00216G01	700XA, PLATE, BOTTOM, OVEN, UFPD	1
163	7P00434H01	700XA, PLATE, SUPPORT, ULTEM, UFPD	1
164	7P00445H01	700XA, BRACKET, SSO, SINGLE	1

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