

RECOR 325 CDR

User's Manual &
Field Installation Guide



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This manual supersedes all previous manuals for the RECOR 325 CDR.

Purpose of this Manual

The RECOR 325 CDR is a powerful device that can be assembled and programmed in a variety of configurations. The purpose of this manual is to provide information for use in instrument shop setup and field installations.

RECOR 325 CDR

Quick Start User's Manual & Field Installation Guide

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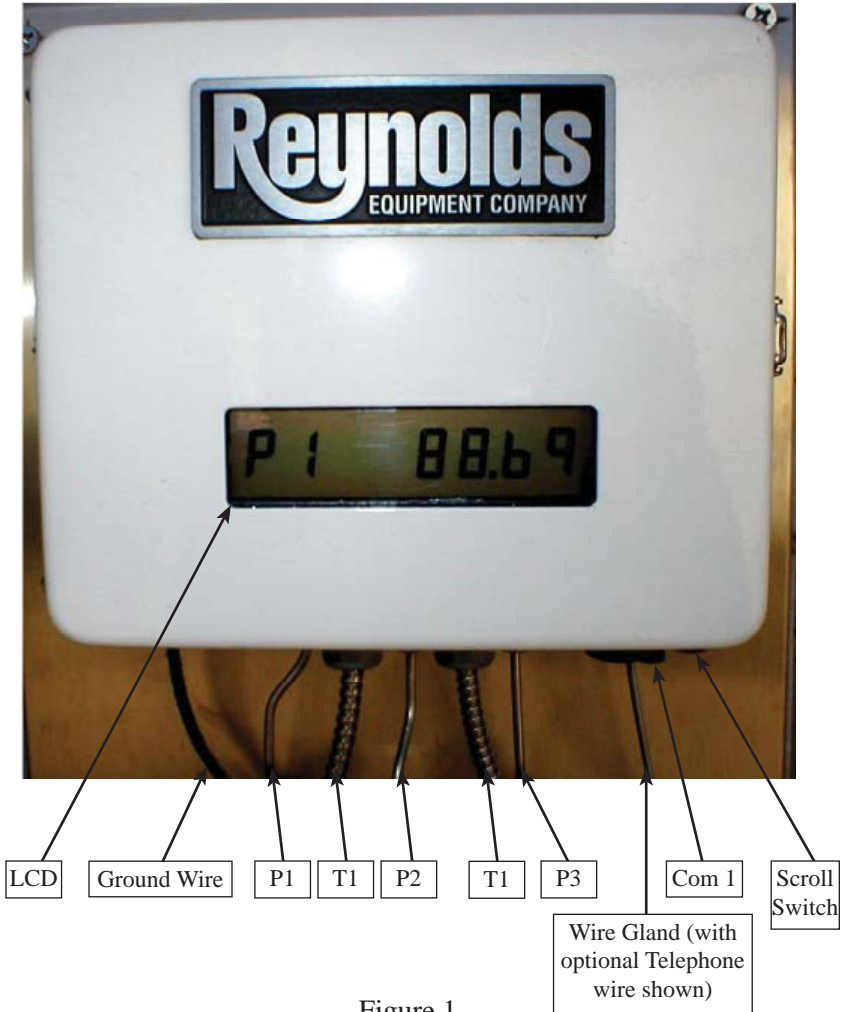
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Reynolds
EQUIPMENT COMPANY

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CHARTLESS DATA RECORDER (325 CDR)

The RECOR 325 CDR is a microprocessor based, self-contained system designed for the purpose of monitoring process using integral pressure, temperature, level and or load sensing devices. Figures 1 and 2 illustrate the location of major components and user interface items.



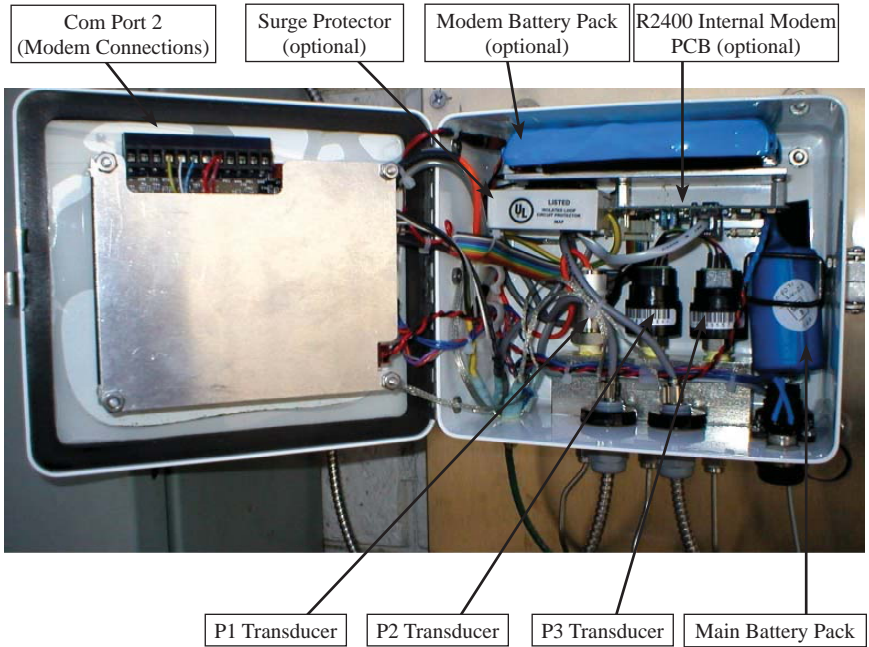


Figure 2

Equipment Required:

- Lap Top Computer (with 9 pin serial port)
- Communications Cable (Manufactured by Reynolds)
- Dead Weight Tester or Accurate Pressure Source
- Temperature Reference (If equipped with temperature probe.)
- Mechanics Tool Kit

MOUNTING / INSTALLATION

Housing Configuration

The RECOR 325 CDR is available in many configurations. The maximum number of integral sensors is as follows:

- Pressure: up to three
- Temperature probes: two process (plus case temp)

The housing type will determine whether sensor connections are made from the bottom or rear of the instrument as follows:

- Wall/Panel mount: bottom connect
- 2" pipe mount: bottom connect
- 1/4" stem mount (single pressure only): bottom connect
- Portable: rear connect

Pressure(s) Connection

Connect up to 3 pressure (or gas) supplies (insulated from pipeline) to the 1/4" NPT female connectors located on the bottom of the CDR housing. After piping is complete, check all connections to ensure that no leaks are present.

Temperature Probe(s) Installation

If equipped, up to 2 standard temperature probes (6" x 1/4" OD) (insulated from pipeline) may be used, and should be installed into the appropriately sized thermowell filled with a thermo conductive medium such as glycol or alcohol. Insert the temperature probes into the thermowells through the standard 1/4" inch NPT male gland (provided) until the tip of the probe reaches the bottom of the well. Secure excess armor cable length of the probe.

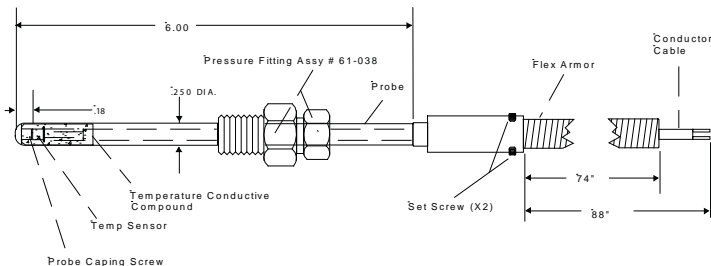


Figure 3

Grounding

The cdr unit must be grounded to maintain safe operation and warranty.

The groundnut of the CDR (located on the bottom of the instrument) must be connected to a suitable known external earth ground (usually a dedicated ground rod and NOT AC ground). All of the major components in the CDR are bonded together and connected internally to this groundnut. It is required that grounding be performed, especially when an external modem and/or external power supply (which requires a dedicated ground rod in close proximity to the safe area) is used. All cabling connecting to the CDR must be shielded with all shields tied to case ground.

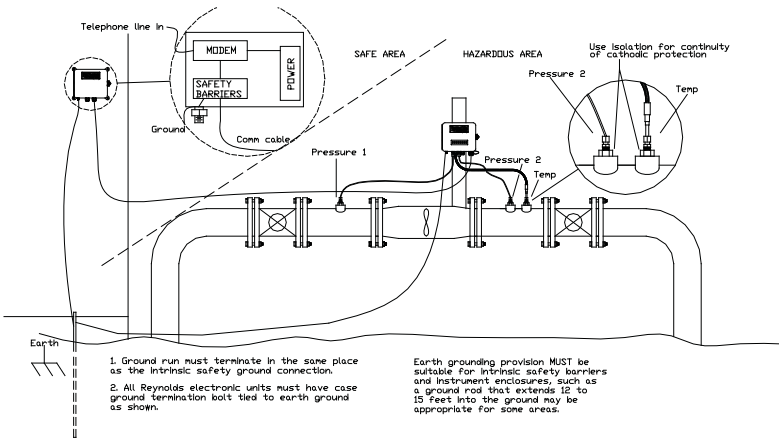


Figure 4

For multiple device interconnections (modems, power supplies etc.) the groundnut of the CDR must be tied directly to this same (safe area) ground rod rather than having a separate ground rod of its own. It will be necessary to isolate the pressure and temperature connections to the pipeline, so as not to disturb the cathodic protection system.

The American Gas Association recommends grounding all electronic field devices to a driven ground rod. This will help protect the device from transients including lightning and power surges on the pipeline.

To reduce the possibility of “secondary” lightning strike damage (damage caused by static electricity fields in the immediate area), the above precautions are required. However, these precautions cannot prevent damage to an instrument that receives a “direct” lightning strike.

Battery Pack and Back-up Batteries

The CDR units utilize a 1.5-volt, modular battery. The pack supplied with the CDR consists of an alkaline dry cell and a protection circuit.

CDR units are shipped from the factory powered and ready to install (unless otherwise specified).

The CDR also incorporates an on board uninterruptible power supply. This consists of one factory installed "AA" lithium cell rated at 3.6 volts. This cell is easily replaced in the field.

The CDR incorporates an on board battery for backup of RAM. This consists of a replaceable button style lithium battery located on the inaccessible side of the PCB.

Normal battery power should be displayed between the range of 1.5 to 1.7 volts for a new battery, and when the primary power drops below .2 volts, the unit will switch to lithium backup. Under normal conditions, the battery pack should last up to four years.

Warning: The maximum voltage allowed on the "Main battery" input is 2 volts. Only use the 1.5 volt battery pack supplied by Reynolds. If this voltage is exceeded, damage to the main PCB will result and warranty will be voided.

Tech Note: If all three batteries lose power, the data that is stored in non-volatile memory will not be lost. This includes Calibration, Poly (transducer) and configuration data.

Contact Reynolds Equipment Company for replacement batteries: main battery pack (PN: 61-9071), Lithium backup battery (PN: 65-0580 and coin battery (PN: 65-8002).

External Power

The CDR is NOT recommended for use with an external power source.

External Modem

The CDR is equipped with two RS232 communication ports. "Com Port 1" (see Figure 1) is dedicated to local direct communication at 19200 baud using the RECOR "comm cable". "Com Port 2" (see figure 5) is used for

connecting a modem. Remote baud rates available are 300, 1200, 2400 (default), 4800, 9600 and 19200. When configuring for a remote modem, the “Remote Modem Baud Rate” in the unit must match the “Trained” baud rate of the field modem being used. Note: Com Port 2 must have RX, TX, and GND connected. CTS or CD must also be connected.

When connecting a modem, consideration should be given to the site electrical classification as to the use of intrinsic safety barriers. The user is advised to refer to Class 1 Division 1 and Division 2 field drawings at the end of this manual then consult the National Electric Code publications for all other classifications. Special consideration should also be given to earth grounding provisions on any externally connected device.

Internal Modem

The CDR may be equipped with an internal modem and phone line surge suppressor (see Figure 2). The modem is pre-configured and pre-wired from the factory, ready for remote communication. If the CDR is equipped with the phone line suppressor, it will be connected directly into the modem’s RJ-11 connector. A 12-volt battery pack (8 “AA” batteries) is supplied, but not connected when shipped. The user must connect prior to remote communication. Assuming one two-minute call per day, everyday, the battery should provide approximately 2 years of service.

The optional phone line surge suppressor is a PN: 64-0321. In the event of a destructive surge, the suppressor will sacrifice itself to protect the equipment. **CAUTION:** Unit must be connected to proper ground to allow the surge suppressor to operate properly.

To connect a phone line to the modem, insert the phone cable through the wire gland on bottom of case (see Figure 1). The cable must be terminated with a RJ-11 connector. Plug into surge protector if provided; else plug directly to the modem.

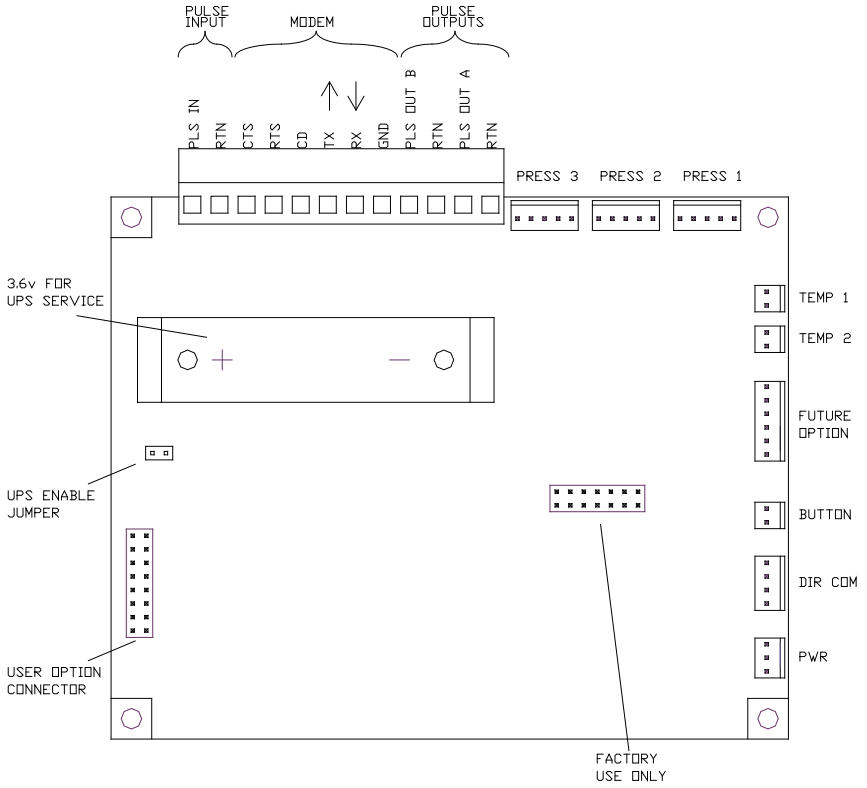


Figure 5

CDRHOST OPERATING SOFTWARE

CDRHost is the companion software interface to the CDR instrument. The application program provides for configuration, calibration, local and remote communication, interrogation, data collection and data processing. The program is supplied in either 3 ½" floppy disk or CD ROM media. The self expanding executable "setup" file will guide the user through the installation process.

Minimum hardware requirements have not been determined at the time of writing, but should work with most Pentium class computers.

CDRHost should work with the following operating systems, Windows 95 (SP2 or greater), Windows 98, 2000, XP and Windows NT (SP5 or greater) operating systems.

Note: CDRHost must be installed on each workstation, in a network, that utilizes it. The data can be sent to a network drive and be shared by other workstations that have CDRHost installed. Remember to change the "Data Paths" of each workstation to use the same network drive and directory.

DO NOT INSTALL THIS SOFTWARE DIRECTLY ONTO THE NETWORK SERVER DRIVE.

Software Installation

To install the CDRhost software, double-click the file "CDRhostXXX_setup.exe" and choose, "Run". Follow the instructions to complete the installation.

NOTE: CDRhost requires the screen setting of at least 800 X 600. (Most computers are already set to this setting) Older computers, not set to 800 X 600, will not be able to display all, or some of the screens. The bottom of the screen will sometimes be out of view.

RECOR CDR TROUBLESHOOTING

The following may serve as a quick troubleshooting guide if you encounter problems in operating the CDR 325 Chartless Data Recorder:

Symptom	Diagnosis
Will not log on	<ul style="list-style-type: none"> • Verify that direct connect baud rate is 19200, or for modem operation, that all components are set up with matching baud rates. • Verify that proper com port is selected on computer. (Com 1 is standard on most laptops) • If error “Com not ready to send” check to see that only 1 session of CDRHost is running and that no other program is competing for the selected com port. After correcting problem, it may be necessary to reboot the computer. • Make sure that “Default Sandia ID“ in “Host Setup” is set to 63. • Verify correct password • Check Com Cable • Check battery voltage • Call factory for assistance
Will not scroll	<ul style="list-style-type: none"> • Check battery voltage • Test scroll switch with ohmmeter • Restart instrument. Remove main power connector, then remove the lithium jumper on the PC. Wait 5 minutes, reconnect the main power first (with good battery), then re-connect the lithium jumper (No data should be lost after restart).

Symptom	Diagnosis
Display is blank	<ul style="list-style-type: none"> • Check Main battery voltage (if good, skip to step 4). • Check lithium voltage • Check lithium jumper is installed • Restart instrument. Remove main power connector, then remove the lithium jumper on the pcb. Wait 5 minutes, re-connect the main power first (with good battery), then re-connect the lithium jumper (No data should be lost after restart). • Call factory for assistance
Not responding to applied pressure	<ul style="list-style-type: none"> • Check connections of transducer wires. • Send original “Calibration file” into the unit and verify calibration, Config column/ Auto Config/ “Restore Instrument” Example filename: 32501234.CFG • Call factory for assistance
Not responding to temperature	<ul style="list-style-type: none"> • Check connections of temperature probe wires. • Send original calibration file into the unit and verify calibration. • Retest with a different known good temperature probe. • Call factory for assistance

PERIODIC MAINTENANCE

Annual Checks

1. Verify calibration and recalibrate if required.
2. Verify proper battery voltage (.8 to 1.7v main, and 3.5 to 3.7 lithium backup cell and 3.0v “coin battery”. Change batteries if necessary.
3. Lubricate door gasket.
4. Check for corrosion at wire terminations.

Spare Parts/Accessories

<u>Description</u>	<u>Part#</u>
Communication Cable (6’/9pin)	61-0070
325 Battery Pack	61-9071
Spare Internal Modem Battery Pack	61-9370
CDR Temp Probe (6’)	61-9634
Lithium Back-up Battery	65-0580
Telephone Surge Protector	64-0321
Coin Battery	65-8002

Retro Kits

Internal Modem Assembly Retro Kit) (does not include surge protector)	61-9360
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Spare PC Boards

Spare CDR PC Board	61-9091
Spare Internal/External Modem PCBoard	65-9210

Spare Transducers

Contact factory.

Spare Temperature Probes

Contact factory.

Configuration Worksheet

Complete this worksheet prior to leaving the meter shop to facilitate field configuration and documentation.

Always remember to download the IOR Snapshot or Configuration Log reports as a record of instrument configuration.

User Friendly Names

P1 _____

P2 _____

P3 _____

T1 _____

T2 _____

Site and Modem Info

Site Address: _____

Unit Serial #: _____

Site ID: _____

Baud Rate: _____

Pager 1 (Phone Number): _____

Pager 2 (Phone Number): _____

Pager 3 (Phone Number): _____

Alarm (1-16) _____

Name _____

Point _____

Hi/Low _____

Set Val _____

Reset Val _____

Logging _____

Pulse out _____

Calling _____

Profiler Setup

Interval: _____

Fields: _____

Options and Accessories for the CDR Unit

Pressure Transducer

Contact factory for part number.

The CDR may be equipped with a wide variety of ranges—most of which are available in either gauge or absolute.

Temperature Probe (Part #61-9634)

Temperature Probes are normally supplied with six-foot metal sheathed cable. Contact factory for non-standard lengths.

Modem

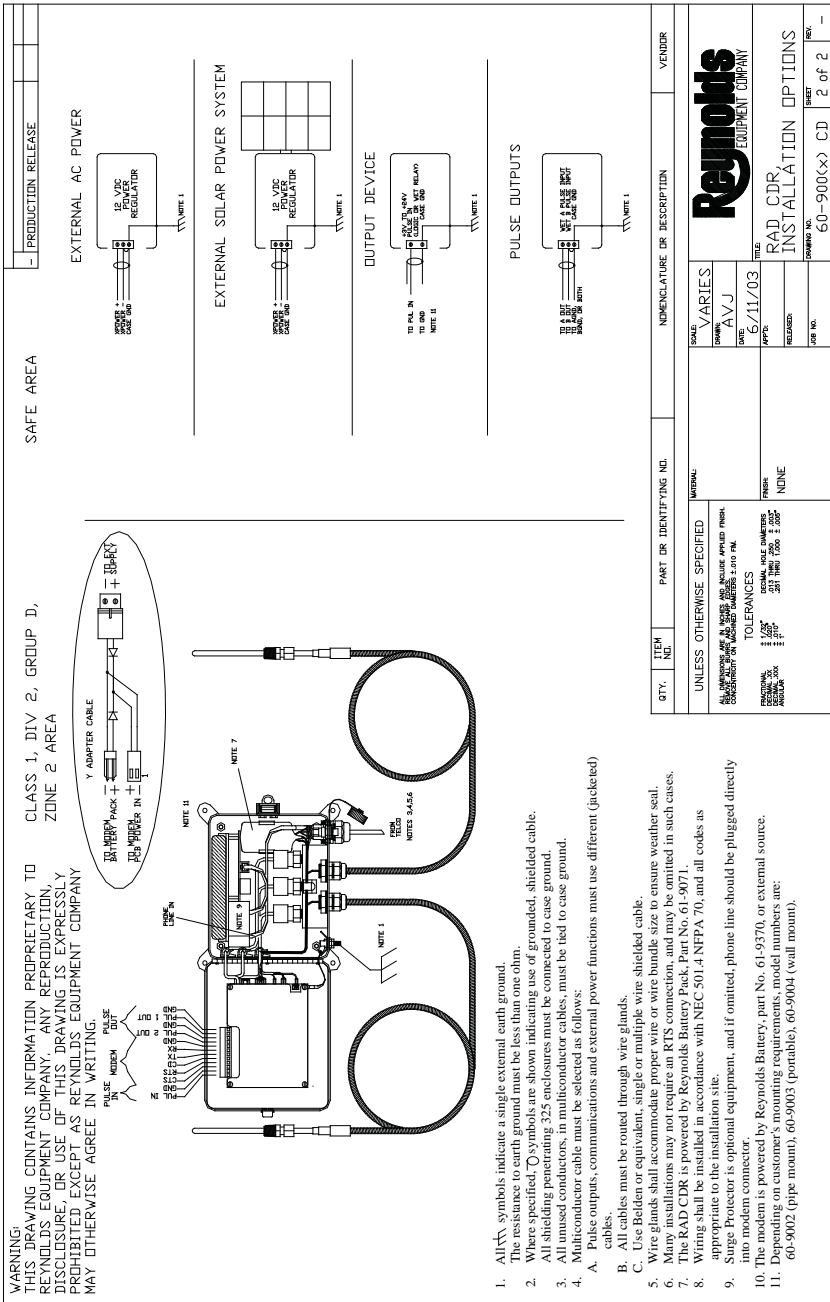
Reynolds industrial modems are available in one of two configurations—internal or external.

Internal Modem Assembly Retro Kit Part (#61-9360)

Contact factory for other configurations.

NOTE: For information on the above options, refer to the documentation sent with the kit.

CLASS 1 DIVISION 2 FIELD DRAWING



FACTORY CONSULTATION

When calling the factory or your area representative for further troubleshooting, please have the following information ready:

Customer Information

1. Name(s)
2. Company
3. Phone Number(s)
4. Location (site I.D.)

Hardware Information

1. Instrument Serial Number
2. Transducer Serial Number(s)
3. Date of Manufacture
4. Model
5. Instrument Software Version
6. Battery Voltage
7. Any externally connected devices
8. Phone Number If Applicable
9. Most Recent Printed IOR Report

CUSTOMER ASSISTANCE, MANUFACTURING AND SERVICE LOCATIONS

1-800-775-3424

Fax: (469) 429-5281

MANUFACTURING AND WARRANTY SERVICE CENTERS
Reynolds Equipment / Heath Consultants Factory Service Center

9030 Monroe Road
Houston, Texas 77061
Phone: (713) 844-1350
Fax: (713) 844-1398

DIVISION OFFICES

Northeast Region

1051 Garden Street
Greensburg, PA 15601
Phone: (724) 836-7830
Fax: (724) 836-7835

Central Region

9030 Monroe Road
Houston, Texas 77061
Phone: (713) 844-1300
Fax: (713) 844-1309

Southeast Region

6727 Heritage Business Court, Suite 720
Chattanooga, TN 37421
Phone: (423) 485-8112
Fax: (423) 490-4580

Western Region

1130 E Pennsylvania Street, Suite 504
Tucson, AZ 85714
Phone: (520) 790-4971
Fax: (520) 790-5016

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