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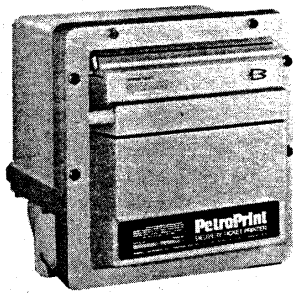
Issue 1

BROOKS INSTRUMENT

INSTRUCTIONS

INSTALLATION AND OPERATING INSTRUCTIONS

BROOKS PetroPrint
Ticket Printer



WARNING

This publication must be read in its entirety before performing any operation. Failure to understand and follow these instructions could result in serious personal injury and / or damage to the equipment.

Should this equipment require repair or adjustment, contact the nearest Brooks Sales Office. It is important that servicing be performed only by trained and qualified service personnel. If this equipment is not properly serviced , serious personal injury and / or damage to the equipment could result.

1 INTRODUCTION

1-1 General

The Brooks PetroPrint is an explosion-proof ticket printer designed for use with the PetroCount Inventory Management System to provide a tamper-proof printout applicable in hazardous Industrial and Chemical environments.

1-2 Description

The PetroPrint is available in either of two formats: Accumulative and Zero Start. The Accumulative system mechanically prints the reading at the start of product transfer and again at the finish. The actual amount of the delivery is the difference between the two readings. The Zero Start system imprints zero at the start of delivery, then upon completion prints the actual quantity delivered.
Because it is designed for the PetroCount family of products it is not recommended that conventional pulse generators and impulse contactors be used to operate the PetroPrint.

1-3 Specifications

Power requirements: 115 Vac/230 Vac, 35W, supplied by PetroCount IMS Control Unit or independent supply

Operating temperature: -20 to 122°F (-29 to 50°C)

Pulse Input
- Source: Voltage Pulse
- Input Voltage: 12 Vdc nominal
  24 Vdc maximum
- Input Resistance: 1.2 k ohms
- Pulse Width: 20 milliseconds minimum on time
- Input Frequency: 25 Hz maximum (2 pulses per unit registration)

Tray Interlock Switch
- Contact Rating: 10 amps., 250 Vac maximum

Count Error Tolerance: ±1 Count per unit registration

Section 2 INSTALLATION

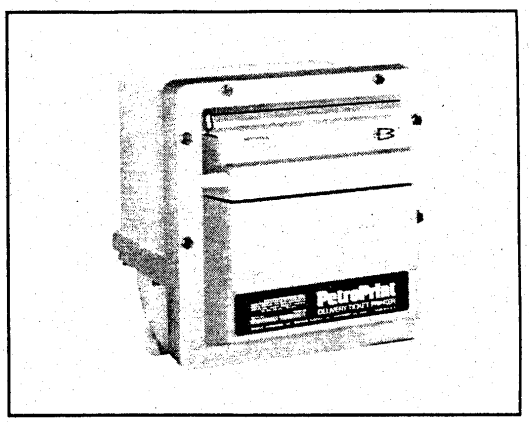
As with all equipment containing electronic components susceptible to damage by static electricity, special care and considerations should be taken when handling these parts.

2-1 General

This section contains specific instructions for receipt of the PetroPrint and installation in association with the PetroCount IMS Control Unit.

2-2 Receipt of Equipment

When the equipment is received, the outside of the packing case should be checked for any damage incurred



during shipment. If the packing case is damaged, the local carrier should be notified regarding his liability.

A report should be submitted to the Product Service Department, Brooks Instrument, Hatfield, PA 19440.
Remove the envelope containing the package list. Carefully remove the equipment from the packing case. Make sure spare or replacement parts are not discarded with the packing material. Inspect for damaged or missing parts.

In the event that any items are missing from your shipment, contact your local Brooks Representative or Sales Office and provide them with the Brooks Sales Order Number.

2-3 Return Shipment

To be able to process returned goods quickly and efficiently it is important that you provide essential information. Do not return any assembly or part without an "R.M.R." (Return Materials Report) or a letter which describes the problem, corrective action (if any) and the work that is to be performed at the factory. "R.M.R." forms can be obtained from Brooks District Sales Offices or the Service Department, Brooks Instrument, 407 W.Vine Street, Hatfield, PA 19440.

Place a copy of either of the above inside the shipping container and attach it physically to the material being returned. A copy of your packing list should be placed within the container.
Failure to follow the above procedure could result in considerable delay because items have not been properly identified.

2-4 Installation

There is no recommended "best way" for placement or mounting of the PetroPrint as this decision is most generally dictated by loading dock and office layout. It is suggested that locations be determined by traffic, access and functionality. Figure 2-1 illustrates a general layout plan where the PetroPrint is mounted above the PetroCount IMS. Mounting may be independent of the IMS (up to 300 feet away, requiring a minimum of 24 gauge signal wire) using pedestals or other apparatus.

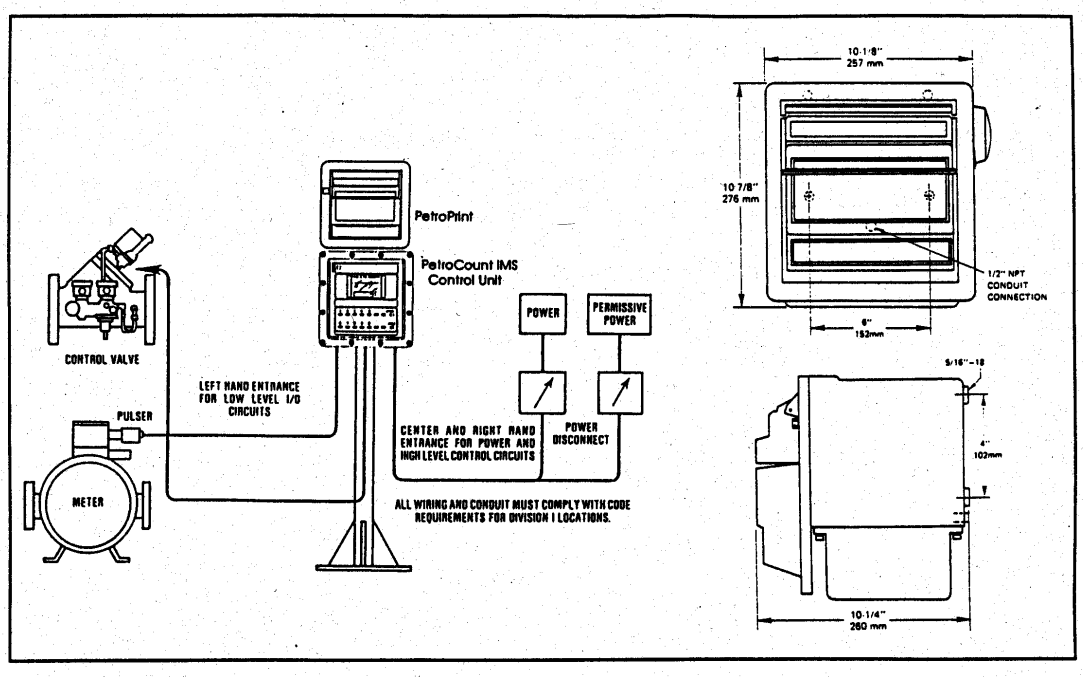


Figure 2-1 Typical Installation and Dimensions

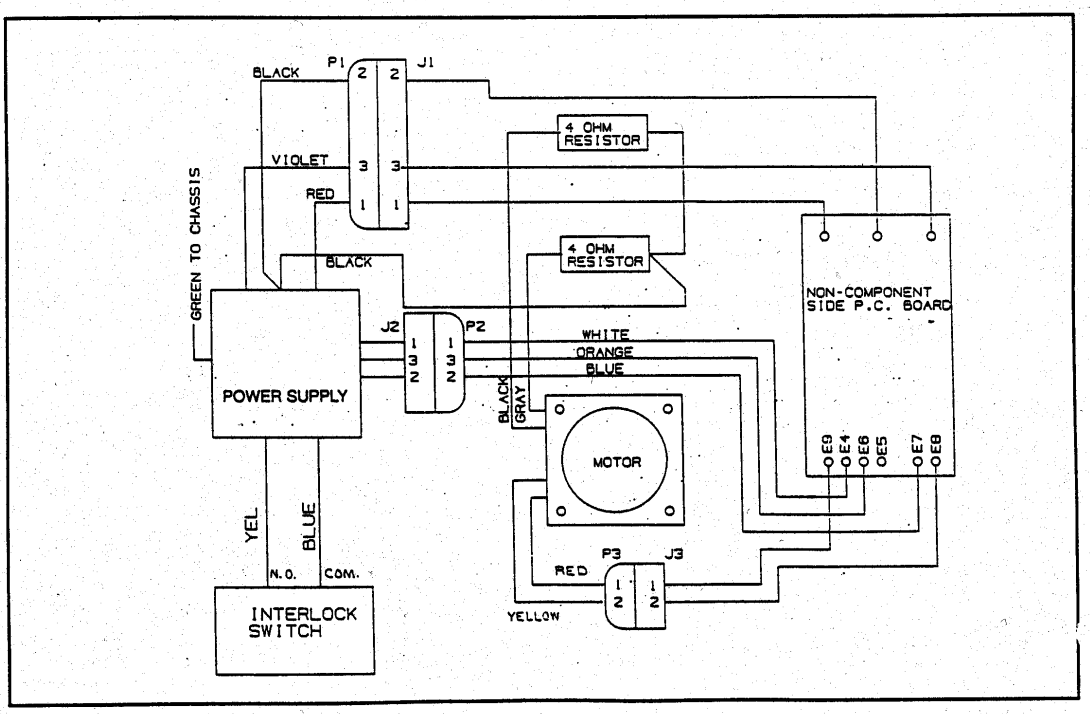


Figure 2-2 Interconnecting Wiring Diagram

2-5 Wiring Hook-up - PetroPrint to PetroCount IMS Control Unit

Reference Figure 2-2 and 2-3 for procedures outlined in this section.

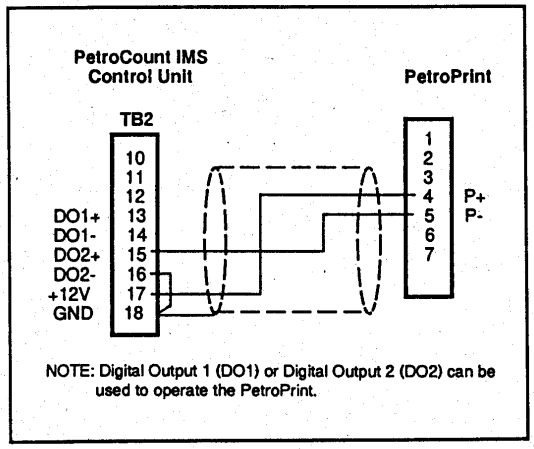
The PetroPrint Power Supply Terminal Strip serves the following functions:

TERM.	FUNCTION
1	L1 - Printer Power (115 Vac or 230 Vac)
2	L2 - Power Neutral
3	Chassis Ground
4	(+) Plus Signal In from PetroCount Control Unit
5	Signal Common
6	Interlock Switch (COMMON)
7	Interlock Switch (NORMALLY OPEN)

NOTE: The Printer Power Supply can be ordered for 115 Vac or 230 Vac operation.

The Interlock Switch connections are independent from all other signal wires and can be used for permissive control or some other AC or DC control function.

The Terminal Connection Diagram, Figure 2-3, indicates the wiring connections to be made between the PetroCount IMS Control Unit and the PetroPrint.



NOTE: Digital Output 1 (DO1) or Digital Output 2 (DO2) can be used to operate the PetroPrint.

Figure 2-3 Terminal Connections

Section 3 OPERATION

3-1 Programming

The PetroPrint operates from a single pulse input signal. The frequency and duty cycle of the pulse signal is very critical for proper operation. The following PetroCount IMS Control Unit parameters must be established if the PetroPrint is to obtain the recommended +/- 1 count error tolerance accuracy.

Parameter Description	Required Setting	Factory Default Setting	Program Location
Data Acquisition Factor	0.5	1.0	Delivery Group
Data Acquisition Pulse Width	20.0 or 25.0 ms	15.0 ms	Delivery Group

The two Data Acquisition Outputs (DO1 and DO2) from the control unit can be programmed for NET or GROSS output. If the control unit is not equipped with the analog (ATC) option both DO1 and DO2 will provide a GROSS pulse output. The data acquisition GROSS and NET parameters are located in the I/O configuration group of the PetroCount control unit program mode.

For a complete listing and description of parameters and programming procedures used with the PetroCount IMS Control Unit reference Instruction Manual Number X-0501, Section 4.

3-2 Operation Sequence-Ticket Printing

Ticket printing is initiated through the PetroCount IMS Control Unit.

1. Press the RESET button on the PetroCount IMS Control Unit.
2. Enter the desired batch quantity.
3. Load a ticket into the PetroPrint (lift cover and insert) and turn the handle one full revolution. This locks the ticket in place and stamps the starting quantity (Zero or Accumulative).
4. Initiate the batch run by pressing the START button.
5. When the unit stops and the batch transfer is complete, turn the PetroPrint handle one full revolution; this prints the finished batch quantity delivered and releases the ticket. Remove the ticket.

Reference Bulletin X-0501 for complete Installation and Operating Instructions for the PetroCount IMS Control Unit.

Section 4 MAINTENANCE

4-1 General

This section contains information necessary for routine maintenance and proper operation of the Brooks PetroPrint. Although the printer is adjusted and lubricated when manufactured, it does require periodic cleaning and lubrication to obtain maximum service. Under normal conditions, it is recommended that service be performed at least twice a year.

WARNING: All power to the unit must be OFF and disconnected before any maintenance procedure is performed. Failure to disconnect from power source could result in serious personal injury.

4-2 General Disassembly (Reference Figure 4-2 PetroPrint Assembly.)

1. Remove the six retaining bolts and washers on the face of the printer and lift off the cover.
2. Reset the printer to zero and remove the screw from the printer handle. Pull the handle, shaft extension and washers out and off.
3. Remove the four screws and washers holding the printer carriage within the housing. Remove the belt from the drive gear and carefully slide the printer assembly from the housing.

4-3 Cleaning

1. Flush printing wheels, reset gears and all drive gears with cleaning solvent. Blow out surplus solvent with compressed air and lubricate the unit as required.
2. If printing wheels are extremely dirty, a small brush may be used to scrub the figures.

CAUTION: DO NOT USE A WIRE BRUSH.

4-4 Lubrication (Reference Figure 4-3 PetroPrint Lubrication Points.)

All lubricants used in the printer must be of a type which remains fluid over the full temperature range for which the printer will be used. They should not be subject to drying or oxidation and cannot be susceptible to gum or other residue deposits.

Typical Oil lubricants would include Anderol L-401-D, Aeroshel Fluid No.3, Regent Spintex Oil (60), Gargoyle Arctic Oil (light), Castrol Hyspin (40), or equivalent. Typical Grease lubricants may include Anderol L-795, Aeroshell 14, Esso Beacon 325 or equivalent.

Oil should be applied to bearing surfaces of all shafts, studs and bosses on which parts move or rotate. Grease should be applied to bearings and mating surfaces of all bevel gears, drive gears, reset gears, wheel ratchets, shafts, studs, bosses and ticket tray assembly as shown in Figure 4-3.

4-5 Ticket Adjustment (Reference Figure 4-1 Ticket Position Guides.)

The PetroPrint, upon receipt, will have the ticket position guides set to the maximum width and depth. If a narrow ticket is being used (less than 4"), or one requiring a different depth setting, it may be necessary to make adjustments to the ticket carriage.

Follow the disassembly procedures outlined in Section 4-2.

Ticket Depth
To adjust the depth of the ticket:
1. Loosen the Ticket Stop Set Screw on the rear of the ticket tray.
2. Move the Stop to the desired position, front or back.
3. Tighten the Set Screw.

Ticket Width
To adjust the lateral position of the ticket:
1. Remove the two Ticket Shield Screws and Shield.
2. Move the guides to the desired position.
3. Replace Shield and Screws.

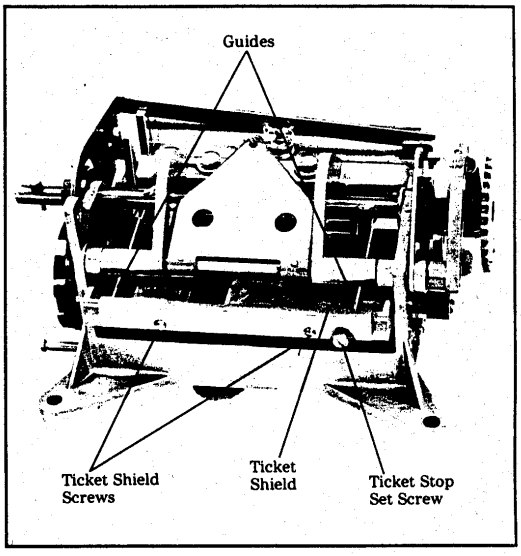


Figure 4-1 Ticket Position Guides

4-6 PetroPrint Reassembly

1. Check all Gears, Bearings, Shafts, Springs, and internal Printing mechanism for wear or damage. Repair or replace as required.
2. Reposition the assembled register/printer into the PetroPrint housing.
3. Return the Drive Belt to the output/input gearing and check for proper fit. Worn or distorted belts should be replaced.
4. Insert Shaft Extension, Washers and Printer handle and secure with Screw.
5. Secure the entire assembly into place using the four Screws and Washers originally removed.
6. Turn the Printer Handle two complete revolutions to assure proper operation. It is suggested that a test ticket be inserted at this time. The first revolution should lock the ticket into position for printing and the second revolution should release the ticket.
7. Place the Cover back on the Printer Housing and secure with original Screws and Washers to obtain weatherproof fit.
8. Mount and restore electrical power to the unit.

Section 5 TROUBLESHOOTING

51- General

Table 5-1 has been provided to aid in basic troubleshooting. Reference Section 4 Maintenance for disassembly and reassembly information. If this PetroPrint is found to be in need of repair it is recommended that the user contact the nearest Brooks Service and Sales Office. Service must be performed by trained and qualified service personnel.

Table 1 Troubleshooting

TROUBLE	POSSIBLE CAUSE	CORRECTION ACTION
Printing knob turns hard.	Burrs on reset or teeth are damaged.	Check reset gear group. Replace defective gears.
Printing knob binds.	Bent ticket tray actuating pin .	Straighten or replace pin.
Printing knob fails to stop after making one complete turn.	One-turn stop pawl may be bent or spring missing.	Straighten pawl or replace spring.
Printing knob binds at one area of reset cycle.	Printing arm cam groove pin not seated properly.	Reseat groove pin.
Wheels fail to reset at zero.	Broken wheel pawl or missing spring .	Replace as required.
Input shaft binds when turned by hand.	Bent transfer pinion shaft .	Replace transfer pinion shaft.
Pin shears on meter or drive coupling .	Groove pin not seated flush on drive pinion. Bits of ticket in gearing.	Replace transfer pinion shaft.
Weak or unclear print image.	Bits of torn ticket are interfering with wheel figures.	Clean wheels and figures.
Print on ticket not legible.	1. Worn printing arm cushion. 2. Weak printing arm spring. 3. Bent rebound plate that does not give proper spring. 4. Weak rebound plate spring.	1. Replace printing arm cushion. 2. Replace printing arm spring. 3. Replace rebound plate. 4. Replace rebound plate spring.
Double Stamping or ghosting.	Weak rebound plate spring.	Replace rebound plate spring.
Print out of position.	Reposition ticket .	Adjust ticket guides and stop.

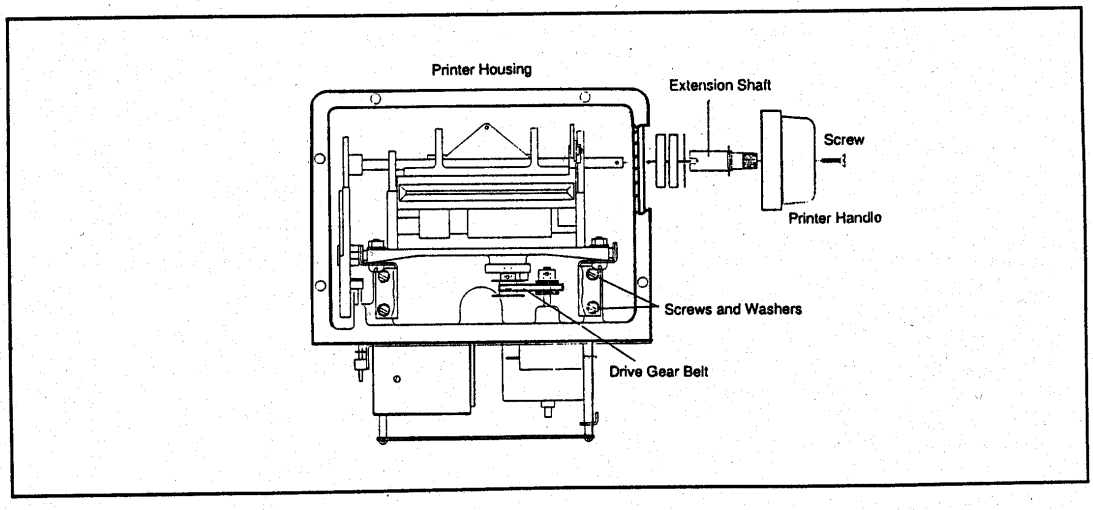


Figure 4-2 PetroPrint Assembly

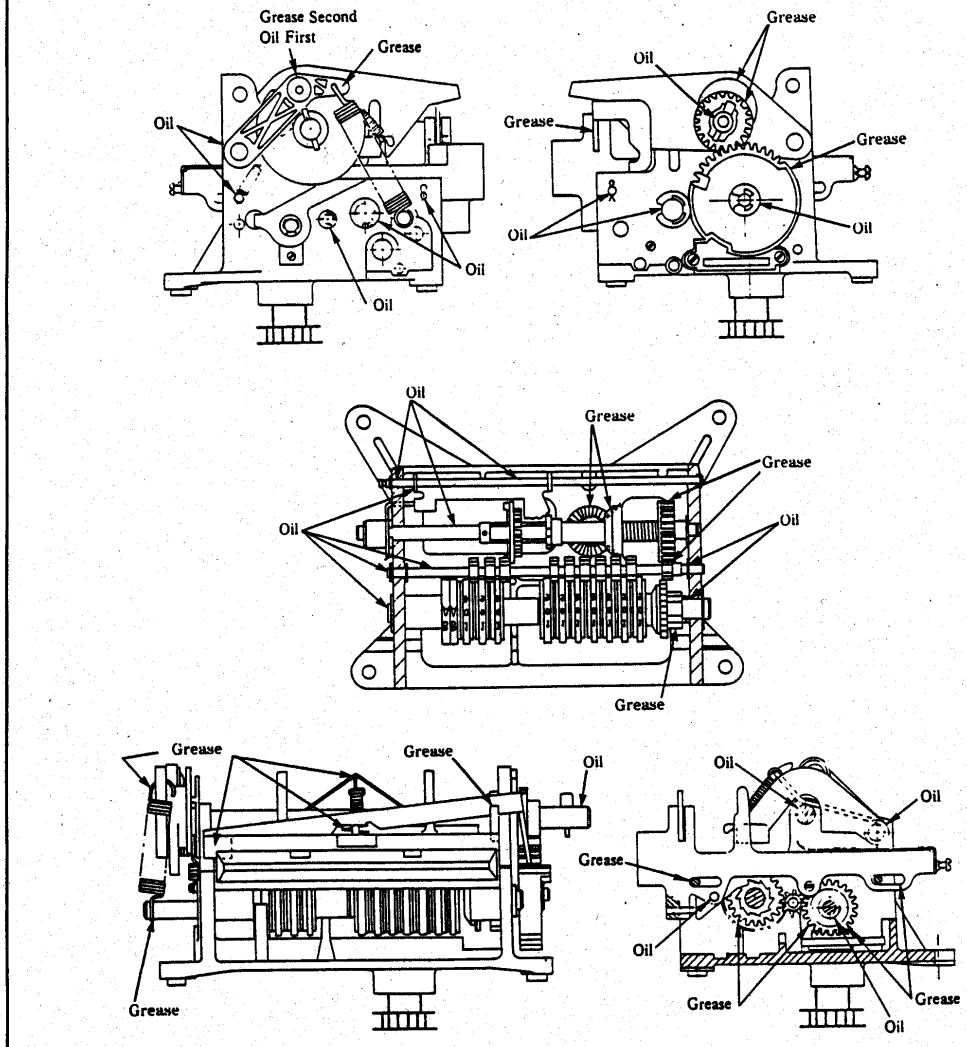


Figure 4-3 PetroPrint Lubrication Points

Guarantees

If at any time within one year after shipment, but not thereafter, it is proved that any part of the equipment furnished by us was defective when shipped by us, we will replace the same free of charge, F.O.B. our plant. Notice of this claim must be made to us within one year after delivery. Our liability is limited to replacement of such defective parts or equipment. There are no guarantees or warranties expressed or implied other than those herein specifically mentioned.

Brooks Instrument Division shall not in any event be liable for any consequential damages, secondary charges, expenses for erection or disconnection, or losses resulting from any alleged defect in the apparatus.

It is understood that corrosion or erosion of materials is not covered by our guarantee.

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