

# MIDGRADE DANBLEND OPERATIONS MANUAL

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**DANIEL FLOW PRODUCTS, INC.  
HOUSTON, TEXAS**

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**DANIEL** *Electronics*  
*Flow Products, Inc*



**THE DANIEL INDUSTRIES, INC.  
DANIEL AUTOMATION  
MIDGRADE DANBLEND  
OPERATIONS MANUAL  
FIRMWARE VERSION 4.0**

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## APPENDICES

Appendix A - Radiographic Inspection Report and Midgrade Blending Test Record

## PREFACE

The purpose of this manual is to familiarize users with the functions of the Midgrade DANBLEND system's hardware and software. It should be used in conjunction with the DANLOAD Operations Manual.

Each section is discussed in its entirety, with a general overview of that part of the system preceding each discussion. Operations staff should review this manual before attempting to operate, troubleshoot, or calibrate any of its equipment.

Further, this manual is written with the assumption that the operator is someone who is knowledgeable in the field of terminal operations, specifically load rack applications. This manual and the DANLOAD Operations Manual should be kept for quick reference when using DANBLEND equipment.

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## **1.0 INTRODUCTION**

Since the Midgrade DANBLEND system is based on the DANLOAD system this manual only serves to define the differences in the two products. This manual is to be used in conjunction with the DANLOAD Operations Manual.

The Midgrade DANBLEND system is an island based continuous blend controller. It can be used to blend products from twenty-five to fifty percent component ratio.

## **1.1 DESCRIPTION OF OPERATION**

The Midgrade DANBLEND hardware differs from the DANLOAD hardware in that there are two meters which are interfaced to one DANTRON. The primary blend meter, meter "A", is normally the meter associated with the product which has the highest percentage of the blend. The secondary blend meter, meter "B", is the meter of the product which has the lower percentage of the blend.

The Midgrade DANBLEND allows for three K factors (low, medium, and high), low flow startup and shutdown, primary and secondary alarms, and three status inputs. However, it does not support the dual pulse option.

The Midgrade DANBLEND also has four additive injection outputs. Their ratios are based on the primary blend meter's pulse count.

The actual blending of product takes place only during high flow of the primary meter. This is to ensure enough time for the system to clean the lines before running the next load.

When a blend begins, the solenoids or valves are energized according to the mode selected in calibration for the "start mode". The valves remain in this position for the amount of time entered in calibration for "initial time in milliseconds". During this time, the objective is to allow the valves to open naturally by the pressure in the lines.

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Control of the valves take place after the flow rate of the primary product has reached 60% higher than the "low flow start up" value set in calibration for the A meter. If this flow rate is not reached within the "time to minimum rate" set in calibration, an alarm is activated. This is to prevent loading from continuing if there is not enough product pressure in the lines.

During the load, the DANBLEND attempts to maintain the valves in a position such that the blend percentage is continuously met. One of the two product valves is always open while the other is partially opened or controlled. Normally, the B product is the limiting product so the B product valve is completely open and valve A is controlled. However, if during the load, the limiting product becomes A, the control is transferred to the B valve. This may happen if the flow on line A is greatly reduced. At first the DANBLEND attempts to open valve A for a maximum of 20 times. If it is not possible to stabilize the blend, valve A is opened completely and valve B is controlled. If the pressure on valve A comes back, control is transferred back to valve A, etc...

If the pressure of the line for product A drops and the flow rate falls below the low flow start up plus 60%, the system ceases to perform any control on the valves. If the system remains in this state for more than twice the "time to minimum rate" set in the calibration, an alarm is raised. This is also true if the flow rate on product A stops completely and the system remains in that state for more time than the "no flow time out" set in the calibration.

At the end of the load as the flow rate decreases, the system does not perform any control on the valves after the flow rate falls below the low flow start up plus 60%. If status point 1 is dropped before the time to minimum rate is exceeded, no alarm is triggered. Thus the time to minimum rate must be set to a value large enough to allow loading to be shut down normally.

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### **2.0 PHYSICAL LAYOUT OF SYSTEM**

Please refer to the DANLOAD Operations Manual.

#### **2.1 DANMASTER LAYOUT**

The DANMASTER layout is the same as in the DANLOAD system except MCUs 5 & 6 are replaced by a temperature board if the temperature option is supported. The Midgrade DANBLEND can support up to three two-component blends without temperature or two two-component blends with temperature.

#### **2.2 DANTROL LAYOUT**

The DANTROL layout is the same as described in the DANLOAD Operations Manual.

**3.0 INITIAL POWER UP OF SYSTEM**

The initial power up of the system is the same as described in the DANLOAD manual however when the "D" key is pressed after the "CHECK TOTALIZERS" prompt, the gross totalizers are automatically displayed for both component meters. The primary meter is displayed first:

GROSS TOTAL A

The message is displayed for approximately 10 seconds to allow the operator time to record the value for comparison with previous readings.

If the temperature option is selected, the system automatically displays the current net totalizer value for the primary meter:

NET TOTAL A

Next, the system automatically displays the current gross totalizer for the secondary meter for 10 seconds:

GROSS TOTAL B

If the temperature option is selected, the system displays the current net totalizer for the secondary meter:

NET TOTAL B

**NOTE:** While the loading application program is running, and there is no loading taking place on a DANTROL, the "D", CANCEL LOAD, key can be used at that time to display the gross and net totalizers for both meters on the alpha-numeric display.

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## 4.0 OPERATIONAL SETUP

Follow the procedures outlined in the DANLOAD Operations Manual under OPERATIONAL SETUP. The differences are noted below.

If the system recognizes that this is the first power up of the battery-backed RAM, the system skips to the "# OF ADDITIVES" prompt which is detailed in Section 4.3 of the DANLOAD Manual, under ADDITIVE OPTION.

If this is not the initial power on of the system, the following message appears:

CHANGE SYSTEM SETUP ? Y/N
------------------------------

The operator must respond with the "A", YES, or "B", NO key. If the operator responds with "YES", the system branches to the prompt concerning additives, beginning at Section 4.3 of the DANLOAD Manual.

If the operator enters a "NO" response, the system branches to the meter calibration setup as discussed in Section 5.0 of this manual.

### 4.1 GENERAL INFORMATION

This section is the same as for the DANLOAD system.

### 4.2 TEMPERATURE OPTION

This section is the same as for the DANLOAD system except that the procedure is repeated for each meter.

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### **4.3 ADDITIVES OPTION**

The additives option is the same as in the DANLOAD system except all of the additives ratios are based on the primary meter pulse counts.

Also, if a zero is entered for the number of additives, the program branches to the valve parameters section (see Section 4.5 of the DANLOAD Operations Manual, VALVE PARAMETERS).

### **4.4 DUAL PULSE OPTION**

The dual pulse option is not supported with Midgrade DANBLEND.

### **4.5 VALVE PARAMETERS**

The amount of time in milliseconds a valve remains open or closed during correction for the proper blend percentage can be entered by the operator via the following prompts:

A OPEN TIMING

A CLOSE TIMING

B OPEN TIMING

B CLOSE TIMING

These timings allow the flow pressure to open or close the valves naturally so the flow ratio of the two products is close to the desired blend ratio.

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At installation time, the best initial flow time is determined for the system. The system prompts the operator with the following:

INIT FLOW MSEC

The operator must then enter a positive numeric value which is the amount of time in milliseconds that the valves stay open until the program begins correction for the blend percentage.

The DANBLEND prompts the operator for:

STRT MODE 1,2,3

The operator enters one of the three value choices. The start mode determines what the initial state of the solenoids are upon initialization of a blend. The different start modes are as follows:

	<u>Upstream Solenoid</u>	<u>Downstream Solenoid</u>	<u>Valve State</u>
1.	Valves A & B - on	Valves A & B - on	Open
2.	Valves A & B - off	Valves A & B - on	Undefined
3.	Valve A - off Valve B - on	Valve A - on Valve B - on	Undefined Open

Most depots select start mode three.

The operator is also prompted for the percentage of the secondary component of the blend:

COMPONENT B%

The operator must either enter a positive number that ranges from twenty-five to fifty.

**4.6 ALARM PARAMETERS**

The alarm parameters are basically the same as the DANLOAD system except for the following differences:

The low flow alarm rate is requested for both the primary and secondary meters. The sequence is as follows:

SLOW RATE ALRM A

and for the secondary meter:

SLOW RATE ALRM B

The time to minimum flow rate, no flow time out and unauthorized flow limit applies to both meters.

**4.7 PUMP DELAY PARAMETERS**

The line pack delay and pump stop delay apply to both meters.

**5.0 CALIBRATION OVERVIEW**

The calibration procedures are the same as described in the DANLOAD Manual except for the following:

1. The calibration procedure for low, medium, and high flow is first done for the primary meter and then repeated in its entirety for the secondary meter.
2. Each prompt has the meter name preceding the message. For example, the primary meter's display appears as:

MTR A LO FLO FACT ?

while for the secondary meter the displays is:

MTR B LO FLO FACT ?

3. The flow factors for the primary meter, meter A, have two digits preceding the decimal point and four following as for a DANLOAD meter. For the secondary meter, however, there are three digits preceding the decimal point and only three following. The display to check the flow factor for the secondary meter appears as:

CORRECT ? Y/N  
XXX.XXX

4. During calibration, all measurements for both meters are carried out to one hundredth of a unit.

**5.1 LOW FLOW PARAMETERS**

This section is the same as for the DANLOAD system.

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### 5.2 MEDIUM FLOW PARAMETERS

The medium flow rate meter k factor for the primary meter should be set approximately half way between the primary meter's low and high flow meter K factors.

2. For the secondary meter, the medium flow rate meter factor should be estimated using the following algorithm:

$$\begin{array}{l} \text{Secondary Meter} \\ \text{Medium Flow} \\ \text{Meter Factor} \end{array} = \begin{array}{l} \text{Secondary Meter} \\ \text{Blend Percentage} \end{array} \times \begin{array}{l} \text{Primary Meter} \\ \text{High Flow} \\ \text{Meter Factor} \end{array}$$

### 5.3 HIGH FLOW PARAMETERS

1. The high flow rate entered for the primary meter also serves as the high flow rate for the blend. In other words, the combined flow rates of the primary and secondary meters during a blend will equal that entered as the high flow rate of the primary meter.
2. When the operator reaches the "CHANGE SYSTEM SETUP" prompt, and the operator responds with "YES" the system returns to the procedure beginning at Section 4.3, ADDITIVE OPTION. A "No" response returns the system back to Section 5.1, LOW FLOW PARAMETERS, for the primary meter.

### 5.4 CALIBRATION OF THE METER

This process is the same as described in the DANLOAD Operations Manual.

**6.0 EXITING SETUP/CALIBRATION**

This procedure is the same as the DANLOAD system except when the operator reaches the part in the calibration procedure which prompts:

DO YOU WISH TO REPEAT ROUTINE ? Y/N
--

and the operator selects "YES", the program returns to Section 4.3, ADDITIVE OPTION.

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### 7.0 GENERAL USER PROCEDURES

When the user approaches a DANTRON, the following message is on the DANTRON alpha-numeric display:

DANBLEND  
READY

This indicates that the Midgrade DANBLEND system is ready for the next operation. In the event that "DANBLEND READY" is not displayed, but an alarm message is displayed, the user should first notify the terminal staff to diagnose the fault.

Status input one on the primary meter's MCU board must be made before the blending process can begin. This status point contact may be the result of a start button pressed on a preset unit located at the loading bays.

The system makes checks of all safety circuits, if applicable, and allows loading to proceed. If any of the safety checks fail the system displays:

SAFETY CIRCUIT  
NOT MADE

**NOTE:** Not all terminals utilize the safety circuit inputs provided by the DANBLEND system. Terminal personnel should familiarize themselves with the applicable safety features of their system at the time of installation. Any failures which may occur should be diagnosed using Section 10.0 of the DANLOAD Operations Manual. Continual faults are very often the results of incorrect values entered in the system. During startup of your system, please notify Daniel Flow Products of any quirks or unique features of your system. All documentation is placed on file at Daniel so as to allow for easier phone diagnostics.

## DANBLEND Midgrade Blender Operations Manual

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When status point one is made, and has satisfied all safety circuits, the loading process begins and the display reads:

LOAD IN PROGRESS

During the load, the top display shows the blend percentage of the B component entered during calibration.

**NOTE:** When a blend load is in progress the fourth additive output on the MCU board for the secondary meter goes low. If a straight load is in progress the additive output stays high.

The message is displayed during the entire loading process or until the user presses the "C", STOP, or "D", CANCEL, key. Pressing either of these two keys and disconnecting status point one causes the load to be terminated. If status point one is still made, the Midgrade DANBLEND starts a new run.

If the user loses a safety circuit during the load, the following message is displayed:

SAFETY CIRCUIT  
NOT MADE

This message does not require the user to re-enter any values but, instead, stops loading until the appropriate measures are taken to correct the safety circuit. After the correction is made, the system once again starts a new run.

At the normal termination of the load, the system displays the following message:

DANBLEND  
READY

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At any time the DANTROL is displaying the "DANBLEND READY" message, the user may access the meter totalizers by pressing the "D", CANCEL, key. The primary meter's gross totalizer is displayed for approximately ten seconds, followed by the secondary meter's gross totalizer for ten seconds. The displays appear in the following manner:

GROSS TOTAL METER A	and	GROSS TOTAL METER B
------------------------	-----	------------------------

If the DANTROL is displaying the "DANBLEND READY" prompt and the user presses the "C", STOP, key, the system displays the details of the last load. If the last load was a blend load the displays appear as follows each remaining on the DANTROL display for ten seconds:

AMT A LAST LOAD XXXXXX.X	AMT B LAST LOAD XXXXX.XX	BLEND % XX.X
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### 8.0 PRODUCT SECURITY

Please refer to the DANLOAD Operations Manual for this section.

### 8.1 PRIMARY ALARMS

The primary alarm section is the same as described in the DANLOAD manual except for the following items:

1. After the operator has cleared an alarm, the display returns to:

DANBLEND  
READY

2. There are only two standard primary alarm conditions for the Midgrade DANBLEND. They are:

ILLEGAL FLOW  
EXCEEDS LIMIT

and:

TEMPERATURE  
PROBE FAIL

**8.2 SECONDARY ALARMS**

There are two secondary alarms designed specifically for the Midgrade DANBLEND. They are:

NO FLOW DETECTED  
ON A METER

and:

NO FLOW DETECTED  
ON B METER

These alarms were implemented to stop the blending process should the following situations arise:

1. The flow rate at the beginning of the load does not reach a flow rate higher than the low flow rate of the A product plus 60%.
2. There is no flow detected on line A or line B and the system remains in that state for more time than the "no flow time out" set in the calibration.
3. If the flow rate of product A falls below the low flow start up plus 60% and the system remains in this state for more than twice the "time to minimum rate" set in the calibration.

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### **9.0 GENERAL HARDWARE SETUP**

This section is as described in the DANLOAD manual with the following exceptions:

1. There are only three ACU boards maximum to one Midgrade DANBLEND if temperature is not selected. With temperature, there are only two ACU boards maximum.
2. The ACU board is only connected to the primary meter's MCU board. (i.e. MCUs 1, 3, and 5)

**10.0 TROUBLESHOOTING GUIDE**

This troubleshooting guide is written with the expectation that terminal personnel performing the tasks be qualified in areas of terminal operations. Daniel Flow Products offers a training course on the Midgrade DANBLEND system operation and equipment. Those who wish to be provided this training please contact:

Daniel Automation Field Service Manager  
Daniel Flow Products, Incorporated  
Tel: (713) 890-0083  
Fax: (713) 890-1208

Should you encounter any problems with the Midgrade DANBLEND system installed at your terminal which cannot be solved with the help of the following guide, please contact field service at Daniel Automation as soon as possible:

Daniel Automation Field Service  
Daniel Flow Products, Incorporated  
Tel: (713) 890-0083  
Fax: (713) 890-1208  
After Hours: (713) 464-5715

### **10.1 OVERVIEW**

Please follow the troubleshooting procedures as outlined in the DANLOAD manual.

The overview section has only one difference for Midgrade DANBLEND in that it can only be connected to a maximum of three ACUs without temperature selected and two ACUs with temperature.

### **10.2 DANMASTER FAULTS**

Please refer to the DANLOAD Operations Manual for this section.

One difference in this section is that the red and green lights on the MCU boards for the secondary meter remain lit but do not flash as they are not connected to a DANTROL.

### **10.3 PRESET ALARMS**

Please refer to the DANLOAD Operations Manual for this section.

The only difference in this section is that there are no pulse transmission failures to diagnose.

### **10.4 VALVE OR SYSTEM FAULTS**

Please refer to the DANLOAD Operations Manual for this section.

**11.0 CALIBRATION: AN IN DEPTH ANALYSIS**

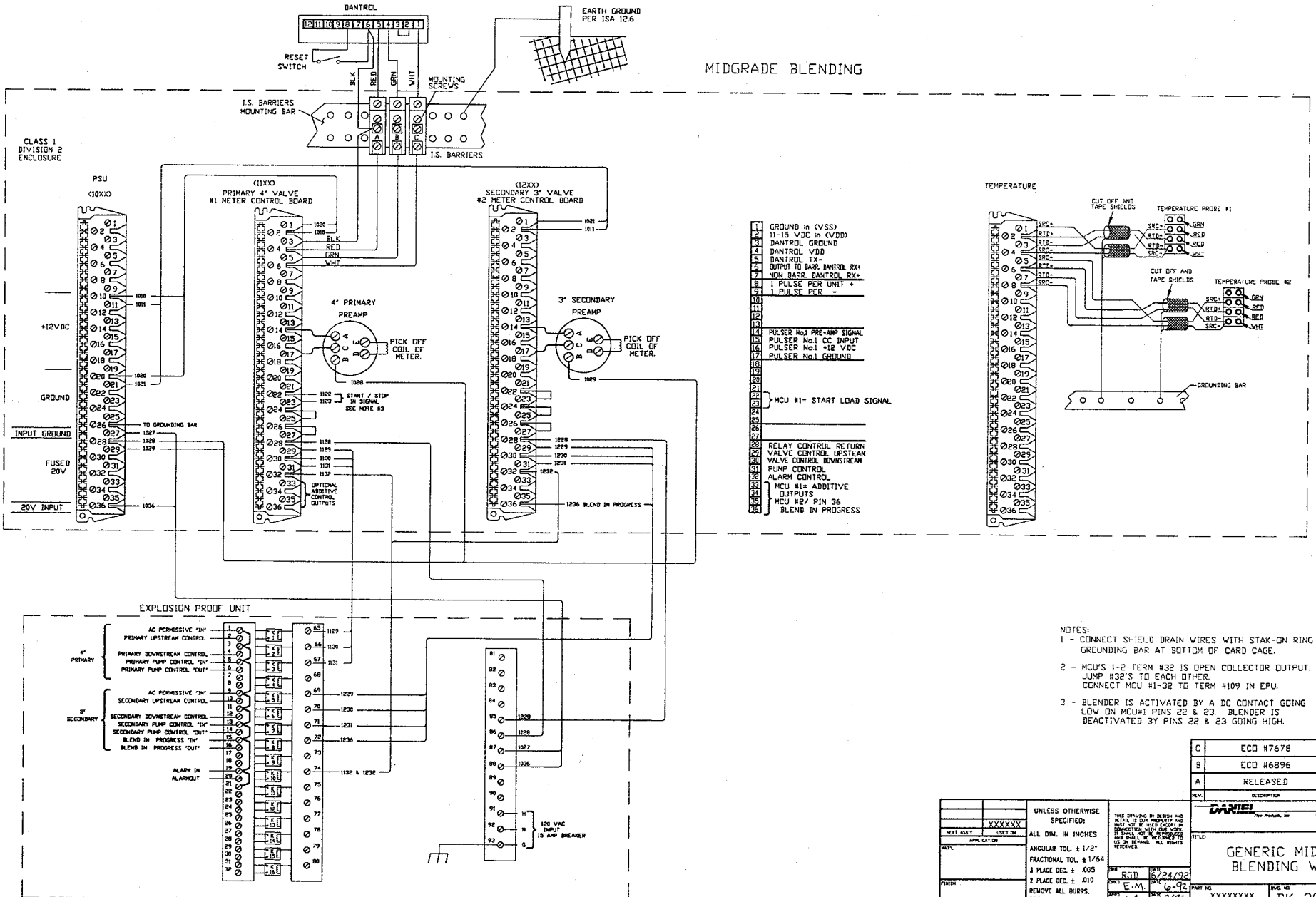
Please refer to the DANLOAD Operations Manual for this entire section. Please also note the modifications added in Section 5.0 of this manual, CALIBRATION OF METER.

**12.0 DIAGRAMS**

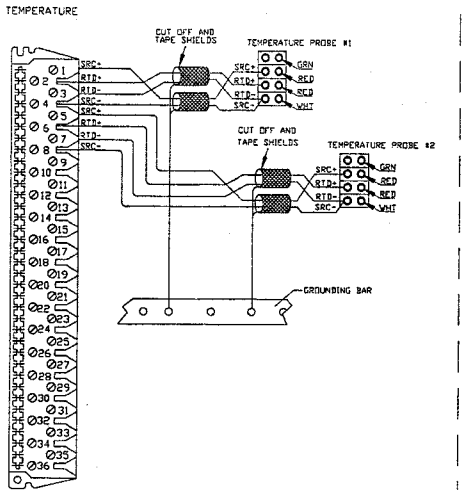
DK-30704 Wiring Diagram

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MIDGRADE BLENDING



- 1 GROUND in (VSS)
- 2 11-15 VDC in (VDD)
- 3 DANTROL GROUND
- 4 DANTROL VDD
- 5 DANTROL TX
- 6 OUTPUT TO BARR. DANTROL RX+
- 7 NON BARR. DANTROL RX+
- 8 1 PULSE PER UNIT +
- 9 1 PULSE PER -
- 10
- 11
- 12
- 13
- 14 PULSER No.1 PRE-AMP SIGNAL
- 15 PULSER No.1 CC INPUT
- 16 PULSER No.1 +12 VDC
- 17 PULSER No.1 GROUND
- 18
- 19
- 20
- 21
- 22 MCU #1= START LOAD SIGNAL
- 23
- 24
- 25
- 26
- 27
- 28 RELAY CONTROL RETURN
- 29 VALVE CONTROL UPSTREAM
- 30 VALVE CONTROL DOWNSTREAM
- 31 PUMP CONTROL
- 32 ALARM CONTROL
- 33 MCU #1= ADDITIVE
- 34 OUTPUTS
- 35 MCU #2/ PIN 36
- 36 BLEND IN PROGRESS



- NOTES:
- 1 - CONNECT SHIELD DRAIN WIRES WITH STAK-ON RING TO GROUNDING BAR AT BOTTOM OF CARD CAGE.
  - 2 - MCUs 1-2 TERM #32 IS OPEN COLLECTOR OUTPUT. JUMP WIRE'S TO EACH OTHER. CONNECT MCU #1-32 TO TERM #109 IN EPU.
  - 3 - BLENDER IS ACTIVATED BY A DC CONTACT GOING LOW ON MCU#1 PINS 22 & 23. BLENDER IS DEACTIVATED BY PINS 22 & 23 GOING HIGH.

C	ECD #7678	RGD	6/92
B	ECD #6896	RGD	6/90
A	RELEASED	RCD	1/90
REV.	DESCRIPTION	BY	DATE

UNLESS OTHERWISE SPECIFIED: ALL DIM. IN INCHES ANGULAR TOL. ± 1/2" FRACTIONAL TOL. ± 1/64 3 PLACE DEC. ± .005 2 PLACE DEC. ± .010 REMOVE ALL BURRS. BREAK SHARP EDGES DO NOT SCALE DWG.		THIS DRAWING IS DESIGNED AND DEVELOPED BY DANIEL INDUSTRIES AND IS THE PROPERTY OF DANIEL INDUSTRIES. IT IS TO BE USED ONLY IN CONNECTION WITH THE VARIOUS PRODUCTS OF DANIEL INDUSTRIES AND SHALL BE RETURNED TO DANIEL INDUSTRIES UPON REQUEST.	
DATE: 6/24/92	REV: RGD	DATE: 6-92	REV: E.M.
APP: 11A	DATE: 7/91	DATE: 7-92	DATE: 03/07/04
PART NO: XXXXXXXX		FILE NO: XXXXXXXX	SCALE: NTS
TITLE: GENERIC MIDGRADE BLENDING WIRING		FILE NO: DK-30704	REV: C



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### 13.0 MISC. LITERATURE

TERMINAL: \_\_\_\_\_ LOCATION: \_\_\_\_\_  
CUSTOMER CONTACT: \_\_\_\_\_ TELEPHONE #: \_\_\_\_\_  
LOADSPOT #: \_\_\_\_\_ BLEND PRODUCT: \_\_\_\_\_  
PRIMARY PRODUCT: \_\_\_\_\_ SECONDARY PRODUCT: \_\_\_\_\_  
METER A SERIAL #: \_\_\_\_\_ METER B SERIAL #: \_\_\_\_\_  
METER MOUNT-VERTICAL/HORIZONTAL: \_\_\_\_\_  
PROM VERSION #: \_\_\_\_\_  
DANBLEND: \_\_\_\_\_ DANTROL: \_\_\_\_\_

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## CALIBRATION PARAMETERS

Blend Percentage: \_\_\_\_\_  
Blend Status Option: \_\_\_\_\_  
# of Additives: \_\_\_\_\_  
Add #1 Ratio: \_\_\_\_\_  
Add #2 Ratio: \_\_\_\_\_  
Add #3 Ratio: \_\_\_\_\_  
Add #4 Ratio: \_\_\_\_\_  
Valve A open timing: \_\_\_\_\_  
Valve A close timing: \_\_\_\_\_  
Valve B open timing: \_\_\_\_\_  
Valve B close timing: \_\_\_\_\_  
Meter A Min Flow Rate: \_\_\_\_\_  
Meter B Min Flow Rate: \_\_\_\_\_  
Time to Minimum Rate: \_\_\_\_\_  
No Flow Time Out: \_\_\_\_\_  
Unauthorized Flow Limit: \_\_\_\_\_  
Line Pack Delay: \_\_\_\_\_  
Pump Stop Delay: \_\_\_\_\_  
Meter A Low Meter Factor: \_\_\_\_\_  
Meter A Low Flow Rate: \_\_\_\_\_  
Meter A Low Flow Startup: \_\_\_\_\_  
Meter A Low Flow Shut Down: \_\_\_\_\_  
Meter A Medium Meter Factor: \_\_\_\_\_  
Meter A Medium Flow Rate: \_\_\_\_\_  
Meter A High Meter Factor: \_\_\_\_\_  
Meter A High Flow Rate: \_\_\_\_\_  
Meter B Low Meter Factor: \_\_\_\_\_  
Meter B Low Flow Rate: \_\_\_\_\_  
Meter B Low Flow Startup: \_\_\_\_\_  
Meter B Low Flow Shut Down: \_\_\_\_\_  
Meter B Medium Meter Factor: \_\_\_\_\_  
Meter B Medium Flow Rate: \_\_\_\_\_  
Meter B High Meter Factor: \_\_\_\_\_  
Meter B High Flow Rate: \_\_\_\_\_

**APPENDIX A**

**Radiographic Inspection Report and Midgrade  
Blending Test Record**

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**DANIEL INDUSTRIES, INC.  
CUSTOMER PROBLEM REPORT**

FOR FASTEST SERVICE, COMPLETE THIS FORM, AND RETURN IT ALONG WITH THE AFFECTED EQUIPMENT TO CUSTOMER SERVICE AT THE ADDRESS INDICATED BELOW.

COMPANY NAME: \_\_\_\_\_

TECHNICAL CONTACT: \_\_\_\_\_ PHONE: \_\_\_\_\_

REPAIR P. O. #: \_\_\_\_\_ IF WARRANTY, UNIT S/N: \_\_\_\_\_

INVOICE ADDRESS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

SHIPPING ADDRESS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

RETURN SHIPPING METHOD: \_\_\_\_\_

EQUIPMENT MODEL #: \_\_\_\_\_ S/N: \_\_\_\_\_ FAILURE DATE: \_\_\_\_\_

DESCRIPTION OF PROBLEM: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

WHAT WAS HAPPENING AT TIME OF FAILURE? \_\_\_\_\_

ADDITIONAL COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

REPORT PREPARED BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

IF YOU REQUIRE TECHNICAL ASSISTANCE, PLEASE FAX OR WRITE THE MAIN CUSTOMER SERVICE DEPARTMENT AT:

DANIEL FLOW PRODUCTS, INC.  
ATTN: CUSTOMER SERVICE  
19203 HEMPSTEAD HIGHWAY  
HOUSTON, TEXAS 77065

PHONE: (713) 897-2900  
FAX: (713) 897-2901

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## WARRANTY CLAIM REQUIREMENTS

To make a warranty claim, you, the Purchaser, must:

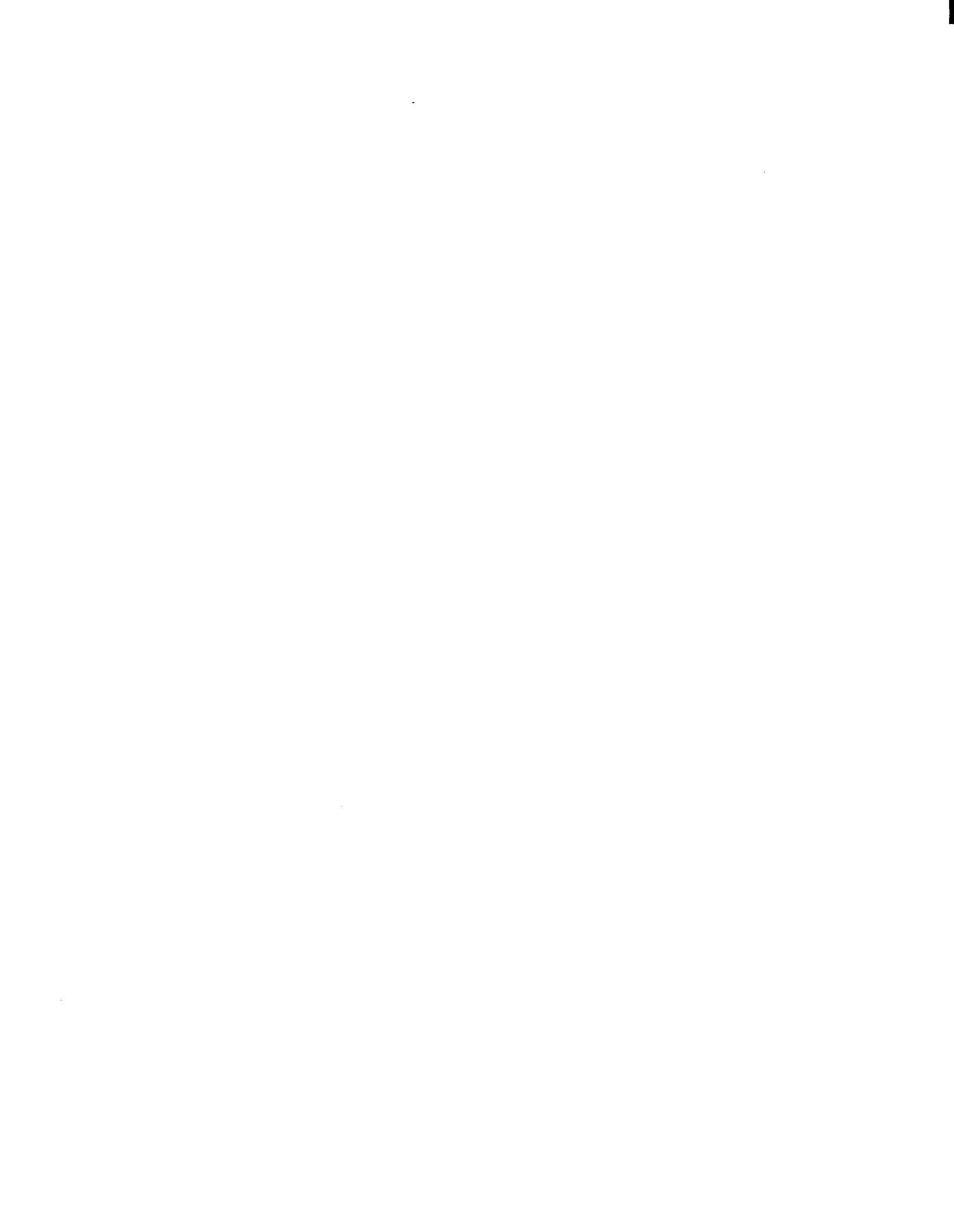
1. Provide Daniel with proof of the Date of Purchase and proof of the Date of Shipment of the product in question.
2. Return the product to Daniel within twelve (12) months of the date of original shipment of the product, or within eighteen (18) months of the date of original shipment of the product to destinations outside of the United States. The Purchaser must prepay any shipping charges. In addition, the Purchaser is responsible for insuring any product shipped for return, and assumes the risk of loss of the product during shipment.
3. The Purchaser may request information on how to obtain Warranty service or to locate the nearest Daniel's office, sales or service center by phoning (713) 467-6000, or by using Telex 77-5421 - Cable: DANIELIND, or by contacting:

Daniel Flow Products, Inc.  
Electronics  
P. O. Box 55435  
Houston, Texas 77255

When contacting Daniel for product service, the purchaser is asked to provide information as indicated on the following "Customer Problem Report".

Daniel Flow Products, Inc., Electronics offers both on call and contract maintenance service designed to afford single source responsibility for all its products.

Daniel Industries, Inc. reserves the right to make changes at any time to any product to improve its design and to insure the best available product.





The sales and service offices of Daniel Industries, Inc. are located throughout the United States and in major countries overseas. Please contact the Daniels Industries, Inc., Electronics Division at P. O. Box 55435, Houston, Texas 77255, or phone (713) 467-6000 for the location of the sales or service office nearest you. Or Telex 77-5421 - Cable: DANIELIND Electronics offers both on-call and contract maintenance service designed to provide single-source responsibility for all Electronics Products.

Daniel Industries, Inc. reserves the right to make changes to any of its products or services at any time without prior notification in order to improve that product or service and to supply the best product or service possible.

**DANIEL**

*Electronics*

*Flow Products, Inc*