

AIR REDUCTION COMPANY INCORPORATED

RESEARCH and ENGINEERING DEPARTMENT

RE-66-085-CRE-36

TOFLOX Synthesizer Study

Final Report

Contract No. NAS8-20099

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AIR REDUCTION COMPANY

INCORPORATED

RESEARCH AND ENGINEERING DEPARTMENT
MURRAY HILL, NEW JERSEY

RE-66-085-CRE-36

TOFLOX Synthesizer Study

Final Report

to

National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Huntsville, Alabama 35812
Attention: PR-RC

Contract No. NAS8-20099

Control No. DCN-1-5-54-01155-01

J.J. Sima

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ABSTRACT

Equipment has been developed for the pilot production of 0.05 - 0.10% O_3F_2 in LO_2 (TOFLOX) in 25 gal. batch quantities.

The equipment, now being operated at Huntsville, demonstrates that TOFLOX can be made reliably and safely on an engineering scale. This report contains information necessary for the operation and maintenance of that equipment.

TABLE OF CONTENTS

	Page
Abstract	i
Illustrations	iii
1. INTRODUCTION AND SUMMARY	1
2. DISCUSSION OF TOFLOX EQUIPMENT	2
2.1 Synthesizer	2
2.2 Fluorine Preconditioning	2
2.3 Procedure for TOFLOX Manufacture	3
3. O_3F_2 SYSTEM LEAK RATE CALCULATION	12
4. PURCHASE ORDERS	13
4.1 Integral Equipment Components	13
4.2 Special Individual Components and Auxiliary Orders	14
4.3 Cancelled Orders	15
4.4 Consumables Orders	15
5. SPECIAL DESIGN DRAWINGS AND SKETCHES	17
APPENDIX A: REACTOR DRAWINGS	21
APPENDIX B: COPIES OF PURCHASE ORDERS	27

ILLUSTRATIONS

Fig. 1. TOFLOX SYNTHESIZER PROCESS FLOW SHEET with INDICATED PURCHASE ORDER NUMBERS	19
Fig. 2. Dwg. No. 8985273 - O_3F_2 REACTOR BANK (Single). . .	23
Fig. 3. Dwg. No. 8985715 - REACTOR	25

1. INTRODUCTION AND SUMMARY

This Final Report has been prepared to provide NASA with the required technical and inventory data necessary for the operation and maintenance of the TOFLOX production equipment.

The TOFLOX production equipment was developed to produce a mixture of 0.05 - 0.10% by weight trioxygen difluoride (O_3F_2) in liquid oxygen (LO_2). The equipment consists of two major systems, one to produce pure O_3F_2 from a fluorine-oxygen gas mixture in a series of manifolded glow discharge reactors at liquid oxygen temperature; and the other, a mixing system for obtaining a homogeneous mixture (TOFLOX) of the O_3F_2 and LO_2 . A nominal capacity of 25 gal. of TOFLOX in about 6 hr. has been achieved.

The equipment was developed at the Airco Murray Hill Laboratory where preliminary operation was completed. The system was then shipped to Huntsville where it was installed in a revetment at Redstone Arsenal. Performance tests also were run at Redstone to demonstrate the adequacy of the equipment and to instruct NASA personnel in its use.

From the results of the performance runs made at Murray Hill and Huntsville, it can be stated that TOFLOX can be made reliably and safely in engineering type equipment as compared with the all glass laboratory type installations previously used for O_3F_2 production.

NASA will use the test quantities of TOFLOX to determine if a significant reduction in blast hazard results when mixed with LH_2 . It is hoped that TOFLOX will provide hypergolic ignition that will permit a controlled deflagration rather than a detonation which usually occurs with the LO_2 - LH_2 system.

This Final Report differs from the conventional, in that it is not prepared as a description of the development and results obtained. Such information is contained in a series of 8 Monthly Reports previously issued under this contract. Rather, this report is prepared to permit NASA personnel to operate and maintain the equipment. Accordingly, 3 sections are contained as follows:

- 1) Operating instructions for the TOFLOX synthesizer.
- 2) A description of the O_3F_2 system leak rate calculations.
- 3) Tabulation of all project purchase orders and the location of the included equipment on a process flow sheet.

2. DISCUSSION OF TOFLOX EQUIPMENT

2.1 SYNTHESIZER

The TOFLOX Synthesizer was developed, fabricated, and tested for MSFC under Contract NAS8-20099 for the purpose of producing pilot plant quantities of nominal 0.05 - 0.10 weight percent trioxygen difluoride (O_3F_2) solution in LO_2 (TOFLOX).

The equipment consists of two independently operable systems, the " O_3F_2 Reactor Unit" and the "TOFLOX Mixer Unit." Pertinent details of each unit are described below.

2.1.1 O_3F_2 Reactor Unit

This system consists of five glass envelopes or "cells" containing electrodes mounted on a common manifold, each of which has its own gas control valve and electrical control circuitry. The reactors and manifold are immersed in a LO_2 bath to synthesize and maintain the produced O_3F_2 at 90°K. The glass "cells", manifold, and associated O_2 - F_2 feed gas plumbing system and helium gas purge system are capable of being evacuated, purged with helium, or vented into the fluorine disposal system as desired.

2.1.2 TOFLOX Mixer Unit

When sufficient O_3F_2 is synthesized to make the desired quantity of TOFLOX when mixed with LO_2 , the O_3F_2 is transferred by gravity flow (while being "washed" with helium gas) into the Mixer Unit containing LO_2 . The mix is stirred with a remote controlled air stirrer motor until analysis of TOFLOX samples indicate that the desired concentration of TOFLOX is obtained. The contents are then transferred into a TOFLOX Transport Vessel for its removal to the test site.

2.2 FLUORINE PRECONDITIONING

2.2.1 Purpose

All components which come in contact with fluorine must be "preconditioned" using low concentrations of fluorine in order to form a thin protective coating over the exposed surfaces. If this is not accomplished, then the introduction of a high concentration of fluorine may cause rapid chemical reaction to the extent that even the metal may burn.

2.2.2 Directions

- 1) Clean all equipment before assembly per MSFC-SPEC-106A, Cleaning Instructions for Liquid Oxygen, as it applies to hydrocarbon cleanliness levels.
- 2) Apply heat to the NaF trap while purging with gaseous nitrogen or helium until no more HF vapor is driven off. (This is required normally only after 5 - 10 runs or when F₂ feed line is penetrated for repairs or other purposes.)
- 3) Assemble the equipment per the attached flow sheet (Fig. 1).

NOTE: The system must be passivated with fluorine prior to use. The following steps are to be followed:

- 4) Pump the entire system down with the vacuum pump and open all internal plumbing system valves except the "O₂-F₂ Feed Valve" (V-17), discharge valves, and vent valves.
- 5) When the system is evacuated, close Surge Tank Inlet Valve (V-14), Helium Purge Valves (V-6 and V-25), Vacuum Pump Manifold Valve (V-13), and open O₂-F₂ Regulator Feed Valve (V-17).
- 6) Open the main valve on the O₂-F₂ supply cylinder and set the regulator at 10 p.s.i.g.
- 7) Carefully and slowly open Surge Tank Inlet Valve (V-14) until a pressure of approx. 380 mm. absolute is registered on the Heise gauge.
- 8) Close valve V-14 and allow the system to remain this way for about 10 hr.
- 9) The system should now be ready to operate.

NOTE: Unless the plumbing system is penetrated, the above procedure need not be repeated.

2.3 PROCEDURE FOR TOFLOX MANUFACTURE

2.3.1 Operating Instructions

2.3.1(1) Reactor unit

- 1) Start vacuum pump with all valves in the system closed.

- 2) Open slowly and in the following order, Vacuum Pump Manifold Valve (V-13) and Reactor Manifold Valve (V-19). (This exposes reactor manifold to the vacuum.)
- 3) When the vacuum gauge indicates a minimum value, attach McLeod gauge to system through Vacuum Bleed Valve (V-38) and calibrate Heise gauge for absolute pressure equating pressures on both gauges, shut Vacuum Pump Manifold Valve (V-13), and check for leaks by observation of the Heise gauge.
- 4) Open the valves (V-18, V-21) controlling the IO_2 supply to the reactor tank and fill the tank with IO_2 .

NOTE: IO_2 level will be controlled automatically via (V-36). During this operation, watch the Heise gauge closely to detect leaks into the reactor caused by change in temperature. If no leaks are found, open V-13 and proceed as follows:

- 5) Open main valve on O_2 - F_2 supply cylinder and set the regulator at 10 - 20 p.s.i.g.
- 6) Open slowly and in the following order, valves V-14, V-15, and V-8. (This introduces F_2 - O_2 into the reactor plumbing.)
- 7) At this point, the Heise gauge should indicate no more than 15 - 20 mm. Hg absolute pressure.
- 8) Adjust all Variacs to an arbitrary setting of 75 with the power off.

NOTE: Disconnect electrical leads to electrostatic voltmeters until after arcs have started.

- 9) Turn on Variac switch #5, and check for an increase in voltage to about 1000 - 1500 v.

NOTE: The unplugged voltmeters will still indicate a rough voltage reading.

An ammeter needle displacement is an indication that an arc has started. (Increase Variac setting if arc is not initiated.)

- 10) Sequentially ignite Reactors 4, 3, 2, 1, as in Step 9. (Connect voltmeter leads after all arcs are obtained.)
- 11) Open No. 5 Reactor Meter Valve (V-5) approximately four full turns and then slowly open further until a voltage increase is observed. Maintain current above about 21 ma. (or arc will cease) by adjusting the Variac.
- 12) Simultaneously adjust V-5 and the Variac setting to attain operating conditions. (nominally, 75 w. at 3000 v. and 25 ma., though experience may indicate that other conditions may be more optimum.)
- 13) Similarly, adjust controls for Reactors 4, 3, 2, 1, in this order.

NOTE: Reactor should now be producing O_3F_2 . Allow to continue until sufficient O_3F_2 is prepared to make the desired quantity of TOFLOX when O_3F_2 is mixed with IO_2 . Experience will determine O_3F_2 production rate.

- 14) At the end of reaction operation, close feed valve O_2-F_2 Reactor Feed Valve (V-8) and open all electrical switches controlling the Variacs.
- 15) Evacuate reactor manifold for about 45 min., then close Vacuum Pump Manifold Valve (V-13) and admit He into the system through Helium Purge Valve (V-11) until ambient pressure is attained as indicated on the Heise gauge.

NOTE: Previous to the latter step, the mix tank may be filled with IO_2 to the desired quantity (as indicated on the remote control panel gauge; 1 in. = 1.88 gal.) level via the direct filling line.

- 16) Open the Reactor Discharge Valve (V-27) from the remote panel board (V-27A) and start the Mixer Motor by adjusting the Mixer Air Control Pressure Valve (V-37A) to the desired pressure to permit adequate mixer motor speed.
- 17) Adjust Helium Purge Valve (V-11) cautiously and observe the Heise gauge carefully during this operation. Any sudden pressure rise indicates incomplete draining or solid inclusions. (Over-pressure may be relieved through the Reactor Vent Valve (V-12)).
- 18) After transfer of O_3F_2 , open Reactor Vent Valve (V-12), close the Reactor Discharge Valve (V-27) and close Helium Purge Valve (V-11).
- 19) Close Reactor Vent Valve (V-12) and open Vacuum Pump Manifold Valve (V-13). Barring leaks the reactors should be ready to operate again as soon as the system pumps down to approx. 20 mm. Hg. Refer to Step 1 of the procedure.

2.3.1(2) Mixer unit

- 1) Fill the level of the mix tank to the desired (about 25 gal.) mark with LO_2 . (See Note after Paragraph 15 above.)²
- 2) Continue operation of the air driven Mixer Motor (V-37) from the remote control panel (V-37A), for several hours or until an analytical test of the mixed TOFLOX shows a concentration of O_3F_2 within desired limits.

2.3.1(3) Sampling and transportation to laboratory for analysis

- 1) Connect fill and vent lines of sample bomb to Mix Tank Sample Outlet and Mix Tank Sample Vent.
- 2) Open Mix Tank Sample Line LO_2 Coolant Valve (V-31).
- 3) Fill TOFLOX Sample Bomb Dewar with LO_2 .

- 4) Open Mix Tank Sample Valve (V-28, V-28A) and allow TOFLOX to flow through bomb for 15 - 30 min. or until single phase (liquid) flow is obtained.
- 5) Close TOFLOX Sample Inlet and Vent valves.
- 6) Close Mix Tank Sample Outlet and Mix Tank Sample Vent valves.
- 7) Open manual Mix Tank Sample Helium Purge Valves (located on Mix Tank Sample Line).
- 8) Close Mix Tank Sample Line IO_2 Coolant Valve (V-31).
- 9) Disconnect TOFLOX Sample Bomb fittings from Mix Tank Sample Outlet and Mix Tank Sample Vent fittings.
- 10) Place TOFLOX Sample Bomb in LN_2 Dewar containing a continuous LN_2 feed on the vehicle and transfer the sample bomb to the laboratory for analysis.

2.3.2 Chemical Analysis at Test Area

It may be expedient to perform the chemical analysis on site rather than transport a sample to MSFC laboratories. In the judgment of the Test Engineer, if this is desirable, the following procedure shall be followed:

1) NaI/NaF Reactor

Assemble apparatus sequentially:

- a) Sample bomb immersed in coolant cryogen (LN_2).
- b) Connect bomb gas exit to inlet connection of NaI trap. (Add Dry Ice - Freon or LN_2 coolant to trap outer chamber.)
- c) Connect NaI trap exit to water bubbler.

2) Iodine-Iodate Titration

- a) Fill buret with $\text{Na}_2\text{S}_2\text{O}_3$ standard solution.
- b) Provide a flask for each sample to be titrated.

- c) Provide sufficient distilled water for transferring and dissolving NaI into flask.
- d) Provide standard starch solution for indicator during titration.

3) Procedure

- a) Open sample bomb gas exit valve.
- b) Lower bomb coolant level until sample gas boil-off rate is sufficient to provide positive pressure through the downstream water bubbler.

NOTE: Care should be taken to prevent "flooding" the system by furnishing too great a gas flow; one or two bubbles per second should be nominally satisfactory.

- c) Repeat above step until all sample has boiled-off from the sample bomb.
- d) Heat sample bomb to 70 - 120°F nominally with hot air gun.
- e) Remove NaI/NaF trap and transfer contents to titration flask using distilled water as necessary.
- f) Titrate resulting NaI/NaF solution to end-point of starch solution using standard $\text{Na}_2\text{S}_2\text{O}_3$ solution.
- g) Calculate O_3F_2 concentration as follows:

$$\text{wt. \% } \text{O}_3\text{F}_2 = \frac{\text{ml. } \text{Na}_2\text{S}_2\text{O}_3 \times N \times 4.3}{\text{ml. sample} \times 1.14}$$

where:

$N = \text{Normality of } \text{Na}_2\text{S}_2\text{O}_3 = 0.1$

$4.3 = 0.043 \text{ (milliequivalent weight factor)} \times 100\%$

$1.14 = \text{IO}_2 \text{ density (g./liter)}$

A typical calculation derived from experimental data of 50 ml. TOFLOX sample which titrated to an end point with 14 ml. of $\text{Na}_2\text{S}_2\text{O}_3$ follows:

$$\text{wt. \% O}_3\text{F}_2 = \frac{14.0 \times 0.10 \times 4.3}{50 \times 1.14} = 0.105\%$$

2.3.3 System Shut-Down (Terminal)

2.3.3(1) Reactor

- 1) Close all valves of Reactor Unit starting with $\text{O}_2\text{-F}_2$ cylinder supply valve.
- 2) Open valve V-9, feed valves V-1, -2, -3, -4, and -5, and Helium Purge Valve (V-11), pressurize reactors to slightly above atmospheric pressure with helium (through V-11).
- 3) Open Reactor Vent (V-12) and flow helium through the reactors to the disposal pit.
- 4) Purge fluorine feed line per the following:
 - a) Open Surge Tank Vent Valve (V-16) until surge tank pressure gauge indicates 0 p.s.i.g.;
 - b) Open Surge Tank Feed Valve (V-14);
 - c) Open Helium/Fluorine Purge Valve (V-25). Flow helium for 3 - 5 min.
 - d) Close V-1, -2, -3, -4, and -5, and open V-8 and V-15 to back purge the flow meter.
- 5) Open the Reactor Bath Discharge Valve (V-26, V-26A). As the oxygen drains out, the reactors will slowly warm up, allowing the residual O_2F_2 to decompose slowly. If slower decomposition is desired (as indicated by

slow pressure build-up on Heise gauge), decrease the IO_2 flow draining from the tank with valves V-26, V-26A.

- 6) Continue to flush the reactors with helium through V-11 until all the IO_2 is drained and the reactors are warmed up.

2.3.3(2) Mixer unit

- 1) Open Mixer Discharge Valve (V-24).
- 2) Close Mixer Vent Valve (V-22).
- 3) Pressurize with helium gas through Mixer Purge Valve (V-20) to no more than 5 - 10 p.s.i.g. and allow helium to flow until contents of mixer unit are vaporized.
- 4) Close Mixer Purge Valve (V-20).
- 5) Open Mixer Vent Valve (V-22).
- 6) Close Mixer Discharge Valve (V-24).

NOTE: The Limestone Pit surface should be "sniffed" for effluent fluorine downwind at the surface. In the event fluorine is detected above 0.4 p.p.m., wet the surface of the limestone pit with water.

2.3.4 Emergency Disposal

REMEMBER: All equipment is expendable if personnel hazard is involved.

- 1) Turn on Building Water Deluge System.
- 2) Put on gas mask if conditions warrant.
- 3) Turn off electrical power to TOFLOX Synthesizer at building circuit breaker panel. LEAVE FAN RUNNING.

2.3.4(1) TOFLOX synthesizer

The TOFLOX Synthesizer system consists of two independent units. Instructions of EMERGENCY disposal of the contents of either the Reactor Unit or the Mixer Unit follow:

2.3.4(1)a Reactor unit

- 1) Shut off O_2-F_2 feed gas supply by closing the valve located on the feed gas cylinder manifold.
- 2) Vent the fluorine entrapped in the lines by opening the Surge Tank Vent Valve (V-16).
- 3) Dump the LO_2 in the reactor tank by opening Reactor Bath Discharge Valves (V-26, V-26A).
- 4) Purge with helium gas by opening Helium Purge Valve (V-11).

NOTE: Likely, malfunctions requiring the dumping of the reactor system contents may be: breakage of Reactor Cell, inability to transfer O_3F_2 Reactor Contents to Mixer Unit through Reactor Discharge Valve (V-27) or stoppage of the vacuum pump. In these events, close Vacuum Valve (V-13), the Feed Gas Supply (V-8), and then purge with helium gas at slightly above ambient pressure through Reactor Purge Valve (V-11) and Reactor Vent Valve (V-12).

2.3.4(1)b Mixer unit

[Follow terminal shutdown procedure:
Section 2.3.3(2)]

3. O_3F_2 SYSTEM LEAK RATE CALCULATION

The portion of the TOFLOX system (Fig. 1) tested for vacuum tightness extends between valves V-27 and V-34 in the reactor section, behind valves V-19 and V-12 in the vacuum line and between valves V-8 and V-9 in the gas supply lines. An accurate estimate of the enclosed volume is 3,750 cc.

To vacuum test the above system it is evacuated to a Heise gage reading of 0 to 10 mm. of mercury and isolated from the pump by valve V-19. Leak rate is determined by the rate of system pressure rise as measured by the Heise gage. Calculations are as follows:

$$\frac{\Delta}{760 \text{ mm. Hg}} \times 3750 \text{ cc.} = \frac{4.94 \Delta \text{ cc./min.}}{\text{Leak Rate}}$$

Where:

Δ = Change of system pressure (mm./min.)

$(\Delta/760)$ = Fraction of system

3750 cc. = System volume

The reactor system can be started at pressures as high as 8 - 10 mm. Hg and at leak rates up to 15 cc./min.

4. PURCHASE ORDERS

To enable NASA to replace or repair components in the event of their malfunction during operation and to permit NASA to procure the consumables necessary, copies of all purchase orders issued during the course of this work are included in Appendix B.

4.1 INTEGRAL EQUIPMENT COMPONENTS

All purchase orders in this category are marked by the Airco P.O. number on the NASA process flow sheet (Fig. 1).

<u>Airco Purchase Order No.</u>	<u>Item</u>
158931	SS Dished Head
159133	Swagelock Fittings
159137	Swagelock Fittings
159156	Swagelock Fittings
159245	Relay Rack
159287	Swagelock Fittings
162971	Universal Joint
162993	Apparatus Fabrication
163008	Electrical Lead Throughs
163009	Relay Rack
163114	Flexible Joints
163165	Equipment Fabrication
163199	Swagelock Fittings
163490	Swagelock Fittings
163671	Swagelock Fittings
163796	Swagelock Fittings
163832	Kel-F Gaskets
175824	Swagelock Fittings
176163	Swagelock Fittings

4.2 SPECIAL INDIVIDUAL COMPONENTS AND AUXILIARY ORDERS

<u>Airco Purchase Order No.</u>	<u>Item</u>
111845	Cryogenic Valves
290384	Cryogenic Dewar
158928	Heise Press Gage
158954	Air Motor Mixer
158956	Fluorine Barricade and Equipment
158967	Discharge and Sample Control Valves
158996	Relief Valves
159025	Differential Pressure Indicator
159031	Voltmeters
159081	Pressure Gages
159103	Discharge Valve Operator
159112	Foxboro Air Switches
159136	Whitey Valves
159171	Relief Valves
159209	Air Switches
159259	Air Loading Stations
163090	3-Way Valve Manifolds
163367	Relief Valve
163391	Airloading Station
163419	Solenoid Valve
163453	Control Valve
176266	Heat Gun
176798	Tube Flare Kit

4.3 CANCELLED ORDERS

The following orders are cancellations and are attached to their countermanding documents:

<u>Airco Purchase Order No.</u>	<u>Item</u>
159083	Hand Valves
159084	Cryogenic Valves
176490	Tube Flare Tool
176826	Halocarbon Oil

4.4 CONSUMABLES ORDERS

These orders are not included on the flow chart because the items were used and discarded when spent. Also included are items which when used had to be left at the equipment emplacement site. All unused materials in this category were delivered to NASA with the TOFLOX equipment.

<u>Airco Purchase Order No.</u>	<u>Item</u>	<u>Use Point</u>
158949	Pyrex-Kovar seals	Reactor
159134	Stainless tubing	Panel and system piping
159202	Swagelock parts	Reactor seals
159329	Rupture discs	Delivered to NASA
162946	Copper rod	Reactor electrodes
162981	Leland Gifford valve seals	Valve V-27
163068	Limestone	Limestone pit
163395	Nuts and bolts	System hardware
163434	Halocarbon oil	Vacuum pump
163537	Stainless pipe	Disposal system
163735	Teflon packing	Cold box seals
175949	Ryolex insulation	Cold box

<u>Airco Purchase Order No.</u>	<u>Item</u>	<u>Use Point</u>
175991	"O" rings	Helium leak detector
176021	Halocarbon oil	Vacuum pump
176132	Pyrex-Kovar seals	Reactor
176148	Swagelock parts	Reactor seals
176165	Ground glass seals	Reactor joints
176287	Swagelock parts	Reactor seals
176342	Housekeeper seals	Reactor joints
176479	Ground glass seals	Reactor joints
176555	Teflon "O" rings	Sampling valves
176713	Teflon valve seals	Valve V-27
176777	Leland Gifford parts	Valve V-27
176785	Teflon valve seals	Valve V-27
176827	Swagelock parts	Reactor seals
176889	Leland Gifford parts	Valve V-27
176997	Halocarbon oil	Vacuum pump
171139	Teflon valve seals	Valve V-27

5. SPECIAL DESIGN DRAWINGS AND SKETCHES

This contract specifies that engineering drawings of the TOFLOX system components will not be included in this report. However, two drawings showing the reactor and its supporting manifold will be appended to provide a permanent record of these units should they need replacement. These drawings are included in Appendix A:

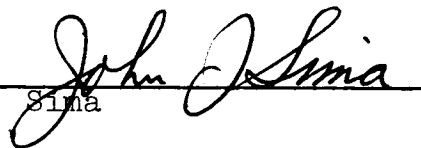
Drawing No.Title

C-898-5273-1

O₃F₂ Reactor Bank

C-898-5715

Typical Reactor

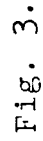

J. Sina

Approved:


W.B. Moen
Assistant Chief Engineer4/18/66
ew



APPENDIX A: REACTOR DRAWINGS

[illegible]

APPENDIX B: COPIES OF PURCHASE ORDERS

1. Integral Equipment Components
2. Special Individual Components and Auxiliaries
3. Cancelled
4. Consumables

1. INTEGRAL EQUIPMENT COMPONENTS



PURCHASE ORDER

158931

AIR REDUCTION COMPANY
INCORPORATEDDATE 6/15/65PURCHASING DEPARTMENT
MURRAY HILL, N. J.
~~INDUSTRIAL~~

FILE

J. T. RYERSON & SON, INC.
203 WESTSIDE AVENUE
JERSEY CITY, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

6/21/65

SHIP VIA

MOTOR FREIGHT

F.O.B.

CINCINNATI, OHIO

TERMS

1/2-10

QUANTITY
ORDERED

MATERIAL

PRICE

23

1 PC.

CONFIRMATION PHONE MR. COLLETTA, 6/14/65

24" O.D., 316 STAINLESS STEEL ASME FLANGED AND
DISHED HEAD, 0.250" THICK

\$125.00 PC.



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

159133
FILE

6/30/65

DATE

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

R. S. CRUM & CO.
~~XXXX~~
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/2/65	U.P.S.	P.S.	1/10
QUANTITY ORDERED	MATERIAL	PRICE	
	CONFIRMATION PHONE MISS JURGENS, 6/29/65		
	SWAGelok FITTINGS AS FOLLOM:		
12 EA. ✓	UNIONS, #400-6-316	\$3.60 EA	
18 EA. ✓	MALE CONNECTORS #400-1-4-316	2.60 EA	
12 EA. ✓	DITTO, #400-1-2-316	2.25 EA	
6 EA. ✓	FEMALE CONNECTORS #400-7-2-316	3.70 EA	
6 EA. ✓	DITTO #400-7-4-316	4.50 EA	
12 EA. ✓	NUTS, #202-1-316	.93 EA	
24 EA. ✓	NUTS, #402-1-316	.72 EA	
12 EA. ✓	NUTS, #812-1-316	1.45 EA	
12 EA. ✓	FRONT FERRULES #203-1-316	.63 EA	
24 EA. ✓	DITTO, #403-1-316	.48 EA	
		ALL LESS 3	

ORDERED BY P. MILLER	REQ. NO. 104516 184310	CHARGE ACCOUNT NO. CMS 36	2
--------------------------------	--	-------------------------------------	----------



PURCHASE ORDER

AIR REDUCTION COMPANY
INCORPORATED

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

159137

FILE

6/30/65

DATE

R. S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

QUANTITY ORDERED	SHIP VIA	U.P.S.	F.O.B.	P.S.	TERMS
7/2/65					1/10

QUANTITY ORDERED	MATERIAL	PRICE
	CONFIRMATION PHONE MISS JURGENS, 6/29/65	
	SWAGelok FITTINGS AS FOLLOW:	
7 EA. ✓	BUTT WELD MALE CONNECTOR #1210-1-12W-316	\$12.25 EA.
4 EA. ✓	DITTO #810-1-6W-316	4.95 EA.
7 EA. ✓	REDUCING UNIONS, #400-6-2-316	4.90 EA.
12 EA. ✓	BULKHEAD UNIONS, #200-6B-316	14.75 EA.
8 EA. ✓	DITTO, #600-61-316	12.90 EA.
6 EA. ✓	DITTO, #810-61-316	15.80 EA.
8 EA. ✓	DITTO #400-61-316	8.60 EA.
18 EA. ✓	ALL TUBE TEES #400-3-316	12.25 EA.
12 EA. ✓	DITTO #810-3-316	17.25 EA.
12 EA. ✓	REDUCERS #400-R-8-316	4.60 EA.

(CONT'D ON PAGE 2 OF 2)

CONTINUATION OF PURCHASE ORDER NO. 159137AIR REDUCTION CO., INC.
MURRAY HILL, N. J.DATE 6/30/65SHEET NO. 2 of 2

12 EA. ✓ FRONT FERRULES #813-1-316
24 EA. ✓ BACK FERRULES #204-1-316
24 EA. ✓ DITTO #404-1-316
12 EA. ✓ DITTO #814-1-316
3 EA. ✓ 1 OZ. TUBES HIGH PURITY GOOP

\$.78 EA.

.57 EA.

.45 EA.

.72 EA.

ALL LESS 35%
11.00 EA.
NET

H. BRUECHER

206117

CRE 36

2

AIRCO

159156

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATEDDATE 7/7/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

R. S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

DIVISION OF
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/8/65	U.P.S.	P.S.	1/10
QUANTITY ORDERED	MATERIAL	PRICE	
	CONFIRMATION PHONE MRS. STOCKMAN, 7/6/65		
	SWAGELOK FITTINGS AS FOLLOW:		
3 EA ✓	BUTT WELD MALE CONNECTOR #810-1-6W-316	\$4.95 EA.	
2 EA ✓	DITTO #810-1-8W-316	7.10 EA.	
2 EA ✓	SWAGELOK TO SOCKET WELD UNION, #810-6-8SW-316	6.30 EA.	
		ALL LESS 35%	



PURCHASE ORDER

AIR REDUCTION COMPANY

INCORPORATED

159245

DATE 7/13/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

EASTERN RADIO CORP.
312 CLIFTON AVENUE
CLIFTON, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
7/23/65	YOUR TRUCK			2/10
QUANTITY ORDERED	MATERIAL			PRICE
	CONFIRMATION PHONE MR. ROSS, 7/12/65			
1 ONLY	STANDARD MODEL TELEPHONE TYPE RELAY RACK, BUD NO. RR-1364, 75-55/64" OVERALL HEIGHT, GRAY HAMMERTONE FINISH			\$25.13 EA.
2 EA.	STANDARD RELAY RACK PANELS, BUD NO. PS-1261-SG			4.26 EA.
1 ONLY	DITTO, NO. PS-1256-SG			2.42 EA.
1 ONLY	DITTO, NO. PS-1255-SG			2.09 EA.
1 ONLY	DITTO, NO. PS-1254-SG			1.75 EA.
1 ONLY	DITTO, NO. PS-1253-SG			1.42 EA.
	NASA /XXXXXXXXXXXX NAS8-20099			
	RATING DK-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.			

H. BRUECHER

206122

CRE 36

2



159287

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 7/9/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

R. S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.
ATT: MRS. STOCKMAN

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	QUANTITY ORDERED	SHIP VIA	MATERIAL	P.O.D.	TERMS
7/21/65		U.P.S.		P.S.	1/10
	2 EA. ✓		SWAGELOK UNIONS #810-6-316		\$5.70 EA. LESS 35%

H. BRUECHER

206129

CRE 36

4



PURCHASE ORDER

162971

AIR REDUCTION COMPANY
INCORPORATED

DATE

7/28/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

P.I.C. DESIGN CORP.
477 ATLANTIC AVENUE
EAST ROCKAWAY, LONG ISLAND
NEW YORK 11518

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
8/9/65	U.P.S.	P.S.	n/30
QUANTITY ORDERED	MATERIAL		PRICE
1 ONLY	/NASA XXXXXXXXXXXXXXXXXXXX NAS8-20099 CONFIRMATION PHONE MR. DENGAN, 7/26/65 PRECISION UNIVERSAL JOINT, CAT. #BC-3, TYPE 303 STAINLESS STEEL PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1		\$16.00 E NET

120332

ORE 36

2

AIRCO

PURCHASE ORDER

162993

AIR REDUCTION COMPANY
INCORPORATED

7/26/65

DATE

PURCHASING DEPARTMENT
MURRAY HILL, N. J.REISINGER CO.
53 ROME STREET
NEWARK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

8/13/65

SHIP VIA

YOUR TRUCK

F.O.B.

DEST.

TERMS

n/30

QUANTITY
ORDERED

MATERIAL

PRICE

CONFIRMATION PHONE MR. ROSSBACH, 7/23/65

FABRICATE THE FOLLOWING PARTS FOR THE O₃F₂
APPARATUS ACCORDING TO OUR DRAWINGS:

- (1) D898 5431-1 (AS MARKED)
- (1) D898 5432
- (1) D898 5433
- (1) D898 5434
- (1) E898 5435-1
- (1) C898 5436
- (1) C898 5437-1
- (1) E898 5438-1
- (1) C898 5439
- (1) E898 5441 (AS MARKED)-1
- (1) C898 5442
- (1) C898 5443
- (1) E898 5444-1
- (1) A898 5445

(PRINTS ENCLOSED)

\$3800.00
NET TOTAL

AIRCO

PURCHASE ORDER

AIR REDUCTION COMPANY

INCORPORATED

7/23/65

DATE

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

SUPPLEMENT NO. 1

TO P. O. NO. 162993

WELCHINGER CO.

53 ROME STREET

NEWARK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY

INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
8/13/65	YOUR TRUCK			n/30
QUANTITY ORDERED	MATERIAL			PRICE
	NASA XXXXXXXXXXXXXXX NAS8-20099 ADD TO THE SUBJECT PURCHASE ORDER: AIRCO TO SUPPLY ONE (1) STAINLESS STEEL DISHED HEAD AS A PART OF APPARATUS TO BE FABRICATED FROM DRAWING D898 5431-1 (ABOVE HEAD SHIPPED TO VENDOR ON OUR RMN 65-234) PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.			



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

SUPPLEMENT NO. #2
 TO P. O. NO. 162993

DATE 8/4/65

PURCHASING DEPARTMENT
 MURRAY HILL, N. J.

HEMMINGER CO.
 53 ROME STREET
 NEWARK, N. J.

John - E.G.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	8/13/65	SHIP VIA	YOUR TRUCK	F.O.B.	DEST.	TERMS
						n/30
	QUANTITY ORDERED	MATERIAL				PRICE
		PLEASE DO NOT PROVIDE THE FLEXIBLE JOINT AS SHOWN ON AIRCO DRWG. #898 5441-B AS PART OF THIS ORDER. REDUCE PRICE TO \$3770.00 NET TOTAL TO ALLOW FOR ABOVE CHANGE.				

SUPPLEMENT NO. 3TO P. O. NO. 162993PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATEDDATE 1/3/66PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

HEMMINGER CO.
53 ROME STREET
NEWARK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~HEMMINGER CO.~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	8/13/55	SHIP VIA	YOUR TRUCK	F.O.B.	DEST.	TERMS	n/30
QUANTITY ORDERED	MATERIAL					PRICE	
PLEASE ADD TO THE SUBJECT PURCHASE ORDER: EXTRA CHARGE FOR GASKETS, LUGS AND CHANGES AT \$114.00 LOT CHANGE NET TOTAL PRICE OF THE SUBJECT PURCHASE ORDER TO \$3884.00 TO INCLUDE ABOVE. REF: VENDOR'S INVOICE #H32117, 10/28/65 FOR RECORD PURPOSES ONLY							

S. WINTER

184316

CME 36

2



PURCHASE ORDER

163008

AIR REDUCTION COMPANY
INCORPORATED

DATE

7/23/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

A. L. LIVERA & ASSOCIATES
JAMES BUILDING
MADISON, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

7/30/65

SHIP VIA

P.P.

F.O.B.

P.S.

TERMS

n/30

QUANTITY
ORDERED

MATERIAL

PRICE

30 EA.

STRAIN-FREE SINGLE LEAD TERMINAL, TYPE C-80N-PP-HV

\$.15 EA.

(PRICE PER PHONE CONVERSATION WITH MR. A. L. LIVERA)

PRIORITY RATING DX-AE (SETURN) CERTIFIED FOR NATIONAL
DEFENSE UNDER DMS REGULATION 1.

G. MILLER

104315

CR 36

2



PURCHASE ORDER

163009

AIR REDUCTION COMPANY
INCORPORATED

DATE 7/23/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

FEDERATED PURCHASER, INC.
155 ROUTE 22
~~SPRINGFIELD, N. J.~~
SPRINGFIELD, N. J.

DR 6-8900

Mr Jones

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
7/29/65	YOUR TRUCK			2/10
QUANTITY ORDERED	MATERIAL			PRICE
	NASA XXXXXXXXXXXXXXXXXXXX NAS8-20099			
1 ONLY ✓	STANDARD RELAY RACK WIRE PANEL, PART #P.S.-1257-SG (14")			\$2.84 EA.
1 ONLY ✓	DITTO, PART #PS-1260-SG, (19-1/4")			3.84 EA.
PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.				



163114

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
PURCHASING DEPARTMENT
MURRAY HILL, N. J.

DATE 8/2/65

FILE

FLEXICO CO.
MIDDLESEX AVENUE AT FACTORY ST.
METUCHEN, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

A DIVISION OF
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
8/10/65	U.P.S.	P.S.	n/30
QUANTITY ORDERED	MATERIAL	PRICE	
1 ONLY ✓	FLEXIBLE JOINT AS PER X AIRCO DRAWING #B8985441 Rev. #1 NOW IN YOUR POSSESSION	\$78.50 EA.	
1 ONLY ✓	FLEXIBLE JOINT AS PER AIRCO DRAWING #A8985435 NOW IN YOUR POSSESSION	\$13.49 EA.	
1 ONLY ✓	FLEXIBLE JOINT AS PER AIRCO DRAWING #A8985484 NOW IN YOUR POSSESSION	\$11.84 EA.	
(PRICES AS QUOTED TO OUR MR. H. BRUECHER)			



PURCHASE ORDER

163165

AIR REDUCTION COMPANY
INCORPORATED

DATE 8/5/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

HEMMINGER COMPANY
53 ROME STREET
NEWARK, NEW JERSEY

ATT: W. ROSSBACK

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

DIVISION OF
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
8/13/65	VENDOR'S TRUCK	DEST.	n/30
QUANTITY ORDERED	MATERIAL	PRICE	
	✓ REFERENCE VENDOR'S QUOTE OF 8/2/65 PLEASE PROVIDE THE ITEMS AS SHOWN ON AIRCO DWGS. A898 5457 AND B898 5458 REV. #1. ALSO PROVIDE THE ITEMS SHOWN ON AIRCO DWGS. C898 5486 AND C898 5487, EXCEPT THAT THE BELLOWS UNITS DESIGNATED AS A898 5484 AND A898 5485 WILL BE FURNISHED BY AIRCO. ALSO THE FINAL ASSEMBLY OF THE VARIOUS SUB-ASSEMBLIES TO THE MIXING TANK WILL BE BY AIRCO, HOWEVER THE VARIOUS SUB-ASSEMBLIES ARE TO BE PROVIDED BY HEMMINGER. NOTE: THE ABOVE DRAWINGS ARE ALREADY IN VENDOR'S POSSESSION.	\$ 420.00 NET TOTAL	



PURCHASE ORDER

163199

AIR REDUCTION COMPANY
INCORPORATED

DATE 8/10/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

R. S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~KEESBOK~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED 8/17/65	SHIP VIA U.P.S.	F.O.B. P.S.	TERMS 1/10
---------------------	-----------------	-------------	------------

QUANTITY ORDERED

MATERIAL

PRICE

SWAGelok FITTINGS AS FOLLOWS:

10 EA. ✓	FEMALE CONNECTORS, #400-7-4-316	\$4.50 EA.
6 EA. ✓	ALL TUBE TEE #400-3-316	12.25 EA.
10 EA. ✓	ALL TUBE TEE #400-3	2.90 EA.
6 EA. ✓	ALL TUBE TEE #810-3-316 .	17.25 EA.
6 EA. ✓	REDUCER #200-R-4-316	4.30 EA.
4 EA. ✓	UNIONS #810-6-316	5.70 EA.
2 EA. ✓	FEMALE CONNECTOR #1210-7-8	2.85 EA.
20 EA. ✓	MALE CONNECTORS #400-1-4 .	.80 EA.

ALL LESS 35%



163490

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 8/30/65

PURCHASING DEPARTMENT
MURRAY HILL, N.J.

FILE

R. S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAINVIEW
MOUNTAINVIEW, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
9/6/65	U.P.S.	P.S.	1/10
QUANTITY ORDERED	MATERIAL		PRICE
8 EA. ✓	NASA XXXXXXXXXXXXX NAS8-20099 SWAGELOK ELBOW UNION, PART NO. 810-9-316 PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.		\$9.70 EA. LESS 35%

Handwritten signature

J. SIMA

290356

CME 36

2



163671

PURCHASE ORDER

AIR REDUCTION COMPANY
INCORPORATED

DATE 9/13/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

R. S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAIN SIDE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

9/10/65

SHIP VIA

OUR MR. SIMA

F.O.B.

DEST.

TERMS

EX 1/10

QUANTITY
ORDERED

MATERIAL

PRICE

3 EA.

NASA

XXXXXXXXXXXXXXXXXXXX NAS8-20099

~~XXXXXXXXXXXXXXXXXXXX~~ CONFIRMATION PHONE MISS JURGENS,
9/10/65SWAGELOK MALE CONNECTORS, 3/4" O.D. TUBE TO
1/2" IPS, CAT. NO. 1210-1-8-316PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR
NATIONAL DEFENSE UNDER DMS REGULATION 1.\$12.25 EA.
LESS 35%

J. J. SIMA

290361-62

CRE 36



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

163796

FILE

DATE 9/22/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

R. S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
9/21/65	OUR MR. J. SIMA	P.S.	1/10
QUANTITY ORDERED	MATERIAL	PRICE	
	NASA XXXXXXXXXX NAS8-20099		
	CONFIRMATION PHONE MRS. HARVEY, 9/21/65		
20 EA. ✓	SWAGELOK REDUCING UNIONS, 1/8" OD. TUBE TO 1/4" O.D. TUBE, #400-6-2-316	\$4.90 EA.	
6 EA. ✓	SWAGELOK MALE CONNECTORS, #810-1-8-316	6.40 EA.	
2 EA. ✓	SWAGELOK MALE CONNECTORS, #810-1-6-316	4.50 EA.	
	PRIORITY RATING DX-A2 (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.	ALL LESS 35%	

9.15



290660

ONE 30

4

PURCHASE ORDER

163832

AIR REDUCTION COMPANY
INCORPORATED

DATE 9/22/65

PURCHASING DEPARTMENT

L.F.

MURRAY HILL, N. J.

HERRINGER CO.
53 ROME STREET
NEWARK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

A DIVISION OF
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
9/17/65	VENDOR'S TRUCK	DEST.	n/30
QUANTITY ORDERED	MATERIAL		PRICE
1 ONLY	NASA XXXXXXXXXXXXXXXXX NAS8-20099 CONFIRMATION - MATERIAL RECEIVED GASKET FOR 5" 150# FLANGE. MADE OF KEL-F GRADE 6060 MATERIAL (PRICE MR. W. ROSSEBACH TO OUR MR. L. FIX) PRIORITY RATING DK-A2 (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1. FIN.		\$12.00 EA.

J. SIMA

22 290366

CRE 36

2



175824

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 9/29/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

R. S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

9/29/65

SHIP VIA

OUR MR. SIMA

F.O.B.

PS

TERMS

1/10

QUANTITY
ORDERED

MATERIAL

PRICE

NASA

XXXXXXXXXXXXXXXXX NAS8-20099

CONFIRMATION PHONE MISS JURGENS, 9/28/65

12 EA. ✓

SWAGELOK #400-1-4-316 MALE CONNECTORS

\$2.60 EA.

3 EA. ✓

SWAGELOK #400-3-4TMT-316 TMT TEES

14.25 EA.

3 EA. ✓

SWAGELOK #400-3-4TFT-316 TFT TEES

14.25 EA.

12 EA. ✓

SWAGELOK #400-3 BRASS ALL TUBE TEES

2.90 EA.
ALL LESS 35%

PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR
NATIONAL DEFENSE UNDER DMS REGULATION 1.

R. E. W. Wood

ORDERED BY

REQ. NO

CHARGE ACCOUNT NO.

J. SIA

290373

CRE 36

2



PURCHASE ORDER

176163

AIR REDUCTION COMPANY
INCORPORATED

DATE 10/21/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

R. S. GRIM & CO.
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~AIR REDUCTION COMPANY~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	10/21/65	SHIP VIA	OUR MESSENGER	F.O.B.	P.S.	TERMS	1/10
	QUANTITY ORDERED	MATERIAL				PRICE	
		CONFIRMATION PHONE MISS JURGENS, 10/21/65					
	20 EA.✓	MALE CONNECTORS #200-1-2-316				\$3.70 EA.	
	20 EA.✓	FEMALE CONNECTORS #600-7-2-316				4.90 EA. ALL LESS 35%	

H/S. W. W. W.

2. SPECIAL INDIVIDUAL COMPONENTS
and AUXILIARIES

PURCHASE REQUISITION

No. 111845

P.O. NO.

AIR REDUCTION CO., INC., MURRAY HILL, N.J.

Name of Company or Division

☐ Company
☐ Division

Vendor

HOFMAN LABORATORIES

225 PARKHURST STREET

NEWARK, N. J.

ATT: MR. VAUGHN

Date

6/18/65

Del. Promised
By Vendor

7/15/65

Terms

n/30

Ship
Via

B.P. OR EXP., INS.

Space Above Is for Purchasing Department Use Only

F.O.B.

P.S.

Ship To

AIR REDUCTION CO., INC., MURRAY HILL, N. J.

Date
Issued

ATT: H. H. BRUECHER

Date
Required

Ship
Via

Issuing
Location

Charge
A/C No.

CRR 36

Sales or Use Tax

☐ TAXABLE

☐ NON-TAXABLE

If Non-Taxable, Give Reason or Exemption Number

QUANTITY	UNIT	DESCRIPTION	PRICE
7 EA.		HOFMAN CRYOGENIC VALVES, PART #C-1795, 1/2" N NPT, DEGREASED FOR OXYGEN SERVICE	\$30.15 EA
1 ONLY		HOFMAN CRYOGENIC VALVE, PART #C-1912, 3/4" NPT, DEGREASED FOR OXYGEN SERVICE	30.50 EACH
COMPLETED			
DATE 8/18/65			
MATERIAL SHIPPED TO VENDOR FOR PROCESSING OR REPAIRS COVERED BY REQ. NO.			

QUOTATION RECEIVED FROM

H. H. BRUECHER

Prepared By

W. MOEN

Approved

H. B. WENDT, P. A.

Approved

Title

PURCHASE REQUISITION
AIR REDUCTION CO., INC., MURRAY HILL, N. J.

R90384

☐ Company
☐ Division

P.O. NO.

HOFMAN LABORATORIES, INC. Name of Company or Division

11/12/65

Vendor

225 PARKHURST STREET

Date

11/10/65

NEWARK, N. J.

Del'y. Promised
By Vendor

n/30

Terms

P.S.

F.O.B.

Ship
Via

OUR MR. C. DI SARNO

Space Above is for Purchasing Department Use Only

AIR REDUCTION CO., INC., MURRAY HILL, N. J.

Ship To

ATT: J. SIMA

Date
Issued

Date
Required

Issuing
Location

Ship
Via

CRE 36

Charge
A/C No.

Sales or Use Tax

☐ TAXABLE

☐ NON-TAXABLE

If Non-Taxable, Give Reason or Exemption Number

QUANTITY	UNIT	DESCRIPTION	PRICE
ONLY		CONFIRMATION PHONE MR. VAUGHN, 11/10/65	
		HOFFMAN LIQUIFIED GAS DEWAR FLASK, SIZE #E-1	ADVISE
		NASA	
		XXXXXXXXXXXXXXXXX NAS8-20099	
		PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.	
		COMPLETED DATE 11/15/65	
		MATERIAL SHIPPED TO VENDOR FOR PROCESSING OR REPAIRS COVERED BY REQ. NO.	

QUOTATION RECEIVED FROM

J. SIMA

W. MOEN

H. E. WENDT, P. A.

Prepared By

Approved

Title

Approved

Title

H. BRUNGER

111034

ORD-36

2



158928

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 6/15/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

HEISE BOURDON TUBE CO., INC.
SOUTH MAIN
NEWTOWN, CONNECTICUT

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

A DIVISION OF
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/23/65	U.P.S.	D.S.	n/30
QUANTITY ORDERED	MATERIAL		PRICE
1 ONLY	CONFIRMATION PHONE MR. ARNDT 6.14.65 HEISE VACUUM MM GAUGE, 0-760 MILLIMETERS OF HG. ABSOLUTE, 8-1/2" DIAL, WHITE FACE, BACK CONNECTED FOR PANEL MOUNTING, 1/4" MALE NPT, 760 SCALE DIVISIONS, 316SS BOURDON TUBE, ALL WETTED PARTS TO BE 303 SS OR 316 SS, <u>CLEANED FOR OXYGEN</u> <u>XXXX SERVICE.</u> NOTE: PROVIDE 3 COPIES OF INSTRUCTION MANUALS, VENDORS PRINTS AND SPARE PARTS LISTS TWO WEEKS AFTER RECEIPT OF PURCHASE ORDER.		\$208.5 EA. NE



158954

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 6/12/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

MIXING EQUIPMENT CO.
51 LINCOLN STREET
EAST ORANGE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

8-13-65

per sample H1, 2

SAME ADDRESS AS ABOVE

DATE WANTED	7/23/65	SHIP VIA	MOTOR FREIGHT	F.O.B.	ROCHESTER, N.Y.	TERMS	n/30
	QUANTITY ORDERED	MATERIAL				PRICE	
	1 ONLY	CONFIRMATION PHONE MR. WEIRE 6/15/65 REFERENCE VENDOR'S QUOTATION 4/13/65 MODEL NO N33AR-33, 1/3 H.P. EQUIVALENT FLANGE MOUNT, LIGHTNING MIXER AS PER THE ATTACHED QUOTE DATED 4/13/65 WITH THE FOLLOWING EXCEPTIONS. THE INTEGRAL STUFFING BOX TO BE PACKED WITH CRANE #C-995 (ASBESTOS COATED WITH TEFLON) INSTEAD OF CRANE #177J6. WILL ADVISE REGARDING LENGTH OF MIXER SHAFT IN ONE WEEK. THE INTERNALS OF THE STUFFING BOX SHOULD BE DEGRESSSED FOR OXYGEN SERVICE. <u>DO NOT PROVIDE A DECONTAMINATION</u> <u>CONTAMINANT TRAP.</u> DRIVE SHAFT AND CHUCK TO BE OF 18-8 STAINLESS STEEL. PROVIDE THREE (3) COPIES OF OPERATING INSTRUCTIONS, VENDOR'S DRAWINGS AND SPARE PARTS LISTS TWO WEEKS AFTER RECEIPT OF PURCHASE ORDER.				492.00 \$420.00 EA.	

SUPPLEMENT NO. 1TO P. O. NO. 158954PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE

7/1/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

MINING EQUIPMENT CO.
51 LINCOLN STREET
EAST ORANGE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~MINING EQUIPMENT CO.~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/23/65	MOTOR FREIGHT	ROCHESTER, N. Y.	n/30
QUANTITY ORDERED	MATERIAL		PRICE
1	CONFIRMING PHONE CONVERSATION YOUR MR. ELLERY TO OUR MR. BRUCHER, 6/23/65 THE DRIVE SHAFT AND THE CHUCK ARE NOT REQUIRED REQUIRED TO BE OF 18-8 STAINLESS STEEL AND CAN BE THE CONVENTIONAL ELECTROLESS NICKEL PLATED STEEL. THE LENGTH OF THE MINER SHAFT IS TO BE 29 INCHES LONG AS MEASURED DOWN FROM THE FACE OF THE 5 INCH FLANGE ON THE MINER. NOTE: PRICE REMAINS THE SAME.		

SUPPLEMENT NO. 2TO P. O. NO. 158954PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATEDDATE 9/9/65PURCHASING DEPARTMENT
MURRAY HILL, N. J.MINING EQUIPMENT CO.
51 LINCOLN STREET
EAST ORANGE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	<u>7/23/65</u>	SHIP VIA	<u>MOTOR FREIGHT</u>	F.O.B.	<u>P.S.</u>	TERMS <u>n/30</u>
QUANTITY ORDERED		MATERIAL				PRICE
		NASA XXXXXXXXXXXXXXXXX	NAS8-20099			
		ADD TO THE SUBJECT PURCHASE ORDER: CHANGE FLANGE TO SOLID STAINLESS STEEL INSTEAD OF STAINLESS STEEL FACED AND FURNISH RIGID COUPLING CONSTRUCTION. TOTAL ADDITIONAL CHARGE FOR ABOVE CHANGES.				\$73.00
		REF: VENDOR'S LETTER OF 8/20/65 (FOR RECORD PURPOSES ONLY)				
		PRIORITY RATING DX-A2 (SATURN) CERTIFIED FOR NATIONAL DMS REGULATION 1.				



PURCHASE ORDER

158956

AIR REDUCTION COMPANY
INCORPORATED

DATE

6/17/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

THE MATTHEWSON CO., INC.
337 MATTHEWSON PLANK ROAD
EAST RUTHERFORD, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

THE MATTHEWSON CO., INC.
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

6/24/65

SHIP VIA

MOTOR TRUCK

F.O.B.

P.S.

TERMS

1/10

QUANTITY
ORDERED

MATERIAL

PRICE

CONFIRMATION PHONE MR. GUTHRIE, 6/16/65

1 ONLY ✓ MATTHEWSON FLOWMETER FOR USE WITH FLUORINE, TUBE
NO. 603, MAX. FLOW RATE 7.6 C.F.H. \$125.00 EA.

1 ONLY ✓ FLUORINE CYLINDER BARRICADE, 6 LB. CYLINDER SIZE 375.00 EA.

1 ONLY ✓ #940F DOUBLE VALVING SYSTEM TO FIT 6 LB.
CYLINDER BARRICADE 50.00 EA.

1 ONLY ✓ #940F METERING VALVE 15.00 EA.

1 ONLY ✓ HYDROGEN FLUORIDE TRAP-COMplete 30.00 EA.



158967

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 6/26/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILL

UNIFLOW VALVE CORP.
49 HENDER AVE
CRANFORD, N. J.

SHIP TO

CHARGE AND BILL TO:

SAME AS ABOVE

DIVISION OF
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/27/65	MOTOR FREIGHT	CRANFORD, N. J.	1/2-10
QUANTITY ORDERED	MATERIAL	PRICE	
	CONFIRMATION PHONE MR. J. CORDICK, 6/15/65		
1 ONLY ✓	UNIFLOW TYPE 800 BARSTOCK CONTROL VALVE, 1/4" PIPE SOCKET WELD CONNECTION, 316 STAINLESS STEEL BODY AND TRIM, EQUAL PERCENTAGE PLUG, VALVE TO CLOSE ON AIR FAILURE, TEFLON CHEVRON PACKING, 8" EXTENSION FOR CRYOGENIC SERVICE, FULL PORT OPENING, DEGREASE FOR OXYGEN SERVICE, 3-15 PSIG AIR OPERATOR.	\$175.00 EA	
2 EA. ✓	UNIFLOW TYPE 800 BARSTOCK CONTROL VALVE, 1/2" PIPE SOCKET WELD CONNECTION, 316 STAINLESS STEEL BODY AND TRIM, QUICK OPENING, VALVE TO CLOSE ON AIR FAILURE, TEFLON CHEVRON PACKING, 8" EXTENSION FOR CRYOGENIC SERVICE, FULL PORT OPENING, DEGREASE FOR OXYGEN SERVICE, 3-15 PSIG AIR OPERATOR	201.00 EA	
1 ONLY ✓	UNIFLOW TYPE 800 BARSTOCK CONTROL VALVE, 3/4" PIPE SOCKET WELD CONNECTION, 316 STAINLESS STEEL BODY AND TRIM, LINEAR PLUG, VALVE TO CLOSE ON AIR FAILURE, TEFLON CHEVRON PACKING, 8" EXTENSION FOR CRYOGENIC SERVICE, FULL PORT OPENING, DEGREASE FOR OXYGEN SERVICE, 3-15 PSIG AIR OPERATOR	230.00 EA	
PROVIDE 3 COPIES OF OPERATING INSTRUCTIONS, VENDOR'S DRAWINGS AND SPARE PARTS LISTS TWO WEEKS AFTER			

(111837)



158996

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 6/22/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

POWER-DRAULICS, INC.
420 NORTHERN BOULEVARD
GREAT NECK, LONG ISLAND
NEW YORK

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~KENNESON~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	7/12/65	SHIP VIA	P.P. OR EXP., INS.	F.O.B.	P.S.	TERMS	n/30
	QUANTITY ORDERED	MATERIAL				PRICE	
	2 EA. ✓	CONFIRMATION PHONE MR. DENNIS, 6/18/65 CIRCLE SEAL RELIEF VALVES, TYPE 520T-4MP-15, SET TO RELIEVE AT 15 PSIG, 1/2" NPT, ALL 303 STAINLESS STEEL WITH TEFLON "O" RING, DECREASE FOR OXYGEN SERVICE SET-UP CHARGE				\$38.40 5.00 LOT	

RETURNER

111842

CRE 36

2

AIRCO

159025

PURCHASE ORDER

AIR REDUCTION COMPANY
INCORPORATED

DATE

6/17/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

BLADE EQUIPMENT CO.
75 GRAND AVENUE
ENGLEWOOD, N. J.
ATT: MR. VOSS

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	QUANTITY ORDERED	SHIP VIA	MATERIAL	P.O.B.	TERMS	PRICE
#1=7/6/65 #2=7/16/65						
		MOTOR FREIGHT		P.S.	n/30	
	1 ONLY		BARTON MODEL #200 DIFFERENTIAL PRESSURE INDICATOR, CAST ALUMINUM HOUSING, 316 STAINLESS STEEL BELLOWS, 0-20 INCHES WATER COLUMN, UNIFORM SCALE WHITE ON BLACK, PANEL MOUNTING, DECREASE FOR OXYGEN SERVICE, CLASS 2 CLEANING, 1000 PSI BODY RATING			248.00 \$250.00 EA
	1 ONLY		BARTON MODEL #289 DIFFERENTIAL PRESSURE UNIT, CAST ALUMINUM HOUSING, 316 STAINLESS STEEL BELLOWS, 0-20 INCHES WATER COLUMN, UNIFORM SCALE WHITE ON BLACK, PANEL MOUNTING, HIGH AND LOW CONTACTS (MILISWITCH), LOW CONTACT TO CLOSE ON DECREASING PRESSURE AT 15 INCHES WATER COLUMN AND THE HIGH CONTACT TO OPEN ON INCREASING PRESSURE AT 17 INCHES WATER COLUMN, DECREASE FOR OXYGEN SERVICE, 1000 PSI BODY RATING PROVIDE THREE COPIES OF VENDOR'S PRINTS AND SPARE PARTS LISTS ONE WEEK AFTER RECEIPT OF PURCHASE ORDER.			278.00 300.00 EA

Handwritten signature/initials



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
PURCHASING DEPARTMENT
MURRAY HILL, N. J.

159031

DATE 5/18/65

FOUR

FERRANTI ELECTRIC, INC.
INDUSTRIAL PARK #1
PLAINVIEW, LONG ISLAND
NEW YORK

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED		SHIP VIA	F.O.B.	SAME ADDRESS AS ABOVE		TERMS
7/30/65		P.P. OR EXP., INS.	P.S.			n/30
QUANTITY ORDERED	MATERIAL					PRICE
4 EA.	PRICE QUOTED TO MR. KILMER BY YOUR MR. ELSTON, 6/15/65 ELECTROSTATIC VOLTMETERS, MODEL NO. A-506F, RANGE 0-3500 VOLTS					\$46.35 EA.



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

159081

DATE 6/23/55

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

W. S. WILSON CORP.
47-50 38TH STREET
LONG ISLAND CITY 1, NEW YORK

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

8/6/55

SAME ADDRESS AS ABOVE

DATE WANTED	QUANTITY ORDERED	SHIP VIA	MATERIAL	F.O.B.	DEST.	TERMS
7/23/55		VENDOR'S TRUCK				2/10
	1 ONLY ✓		ASHCROFT DURAGAUGE, TYPE 1379, 0-60 PSIG, 316 S.S. BOURDON, BOTTOM CONNECTED 1/4" NPT, WALL MOUNTING, DEGREASE FOR OXYGEN SERVICE, ALL WETTED PARTS 316 S.S., 4-1/2" DIAL			\$34.40 EA.
	1 ONLY ✓		ASHCROFT DURAGAUGE, TYPE 1377, 0-30" HG VACUUM, 316 STAINLESS STEEL BOURDON, BACK CONNECTED 1/4" NPT, FLUSH MOUNTING, ALL WETTED PARTS 316 S.S., DEGREASE FOR OXYGEN SERVICE, 4-1/2" DIAL			34.40 EA.
	1 ONLY ✓		ASHCROFT DURAGAUGE, TYPE 1377, COMPOUND 60 PSI AND 30" HG, 316 STAINLESS STEEL BOURDON, BACK CONNECTED 1/4" NPT, FLUSH MOUNTING, ALL WETTED PARTS 316 S.S. DEGREASE FOR NO OXYGEN SERVICE, 4-1/2" DIAL			34.40 EA.
	1 ONLY ✓		ASHCROFT DURAGAUGE, TYPE 1377, 0-15 PSIG, 316 S.S. BOURDON, BACK CONNECTED 1/4" NPT, FLUSH MOUNTING, ALL WETTED PARTS 316 S.S., DEGREASE FOR NO OXYGEN SERVICE, 4-1/2" DIAL			34.40 EA.
	3 SETS		MANUFACTURER'S PRINTS OF ABOVE GAUGES / EXCESS (PLEASE MAIL AT ONCE)			ALL LESS 10% NO CHARGE
(PRICES QUOTED TO OUR MR. H. BRUECHER)						

4.10.11.11



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

159103

DATE 7/2/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

LELAND GIFFORD PRODUCTS CO.
SMITH STREET
BIDDEFORD, MAINE
ATT: BILL BRICE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/5/65	U.P.S.	P.S.	n/30
QUANTITY ORDERED	MATERIAL	PRICE	
1 ONLY	CONFIRMATION PHONE WILLIAM BRYAN, 6/30/65 LELAND GIFFORD VALVE OPERATOR, TYPE 125-200 PNEUMATIC OPERATOR, SUITABLE TO TAKE A 5/8" OD VALVE STEM	\$69.50 EA	
3 COPIES	MFR'S. DRAWINGS OF ABOVE (MAIL AT ONCE)	NO CHARGE	



PURCHASE ORDER

159112

AIR REDUCTION COMPANY
INCORPORATEDDATE 6/29/65PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

THE FOXBORO CO.
80 MORRIS AVENUE
SPRINGFIELD, N. J.

SHIP TO

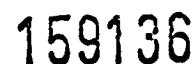
SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/5/65	P.P. OR EXP., INS.	P.S.	n/30
QUANTITY ORDERED	MATERIAL		PRICE
2 EA. ✓	CONFIRMATION PHONE MR. CHRISTY, 6/28/65 FOXBORO AIR SWITCHES, MODEL #39462, ON-OFF TYPE FOR USE WITH VALVE WHICH IS AIR TO OPEN, PANEL MOUNTING		\$20.00 EA.
3 COPIES	MFR'S. DRAWINGS FOR ABOVE (PLEASE MAIL AT ONCE)		NO CHARGE



INCORPORATED

MURRAY HULL, N. J.

DATE _____

6/30/55

R.S. CRUM & CO.
1167 GLOBE AVENUE
MOUNTAINSIDE, N. J.

FILE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

**DATE
WANTED**

7/27/65

SHIP VIA

U.P.S.

F.O.B.

P.S.

TERMS
1/10

**QUANTITY
ORDERED**

MATERIAL

PRICE

CONFIRMATION PHONE MISS JURGENS, 6/29/65

5 EA.

WHITEY VALVES, PART #21RS-2-316

\$61.20 EA.
NET

20 EA.

DITTO, PART #6TS4-316

37.30 EA.

4 EA:

DITTO, PART #6TS8-316

40.00 EA.

2 EA:

DITTO, PART #6RS8-316

39.20 EA.

39.20 EA.
ALL LESS 10%

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

ALL ABOVE VALVES TO BE CLEANED FOR OXYGEN SERVICE



PURCHASE ORDER

159171

AIR REDUCTION COMPANY
INCORPORATED

6/30/65

DATE

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

LOUIS H. FEIN CO.
2 PLEASANT AVENUE
CLIFTON, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	SAME ADDRESS AS ABOVE	TERMS
7/16/65	P.P. OR EXP., INS.	P.S.		// ₁₆ n/30
QUANTITY ORDERED	MATERIAL			PRICE
✓ 3 EA.	LOUIS FEIN RELIEF VALVES, PART #10-159-1-2, SET AT 80 PSIG, 3/8" NPT, CLEANED FOR OXYGEN SERVICE			\$25.88 EA.
3 COPIES	MFR'S DRAWING OF ABOVE (MAIL AT ONCE-PLEASE)			LESS 10% NO CHARGE



159209

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
 PURCHASING DEPARTMENT
 MURRAY HILL, N. J.

DATE 7/5/65

FILE

~~XXXXXXXXXX~~
THE FOMBORO COMPANY
 80 MORRIS AVENUE
 SPRINGFIELD, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED 7/15/65	SHIP VIA P.P. OR EXP., INS.	F.O.B. P.S.	TERMS n/30
QUANTITY ORDERED	MATERIAL		PRICE

1 ONLY ✓ **FOMBORO AIR SWITCH, 2 POSITION, 4 PORTS, TYPE 48281 WITH TYPE 48284 HANDLE FOR USE WITH 80 PSIG AIR**

3 COPIES ✓ **VENDOR'S DRAWING OF ABOVE (PLEASE MAIL ONE WEEK AFTER RECEIPT OF PURCHASE ORDER)**

**\$40.00 EA.
NET**

AIRCO

159259

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE

7/7/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

MOORE PRODUCTS CO.
2720 MORRIS AVENUE
UNION, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

7/19/65

SHIP VIA

P.P. OR EXP., INS.

F.O.B.

P.S.

TERMS
n/30QUANTITY
ORDERED

MATERIAL

PRICE

2 EA.

MOORE MANUAL LOADING STATIONS TYPE 473K15, COMPLETE
WITH GAUGE FOR PANEL MOUNTING, FOR 3-15 PSIG AIR TO
OPEN VALVE

\$80.00 EA.

1 ONLY

MOORE MANUAL LOADING STATION TYPE 473K100, COMPLETE
WITH GAUGE FOR PANEL MOUNTING TO SUPPLY 0-70 PSIG
AIR TO AIR DRIVEN MIXER

77.50 EA.

3 COPIES

MFR'S. DRAWINGS OF ABOVE (PLEASE MAIL AT ONCE)

NO CHARGE

H. BRUECHER

206126

CRE 36

2

AIRCO

PURCHASE ORDER

163090

AIR REDUCTION COMPANY

INCORPORATED

DATE 7/29/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

ANDERSON GREENWOOD CO., INC.
87-66 150TH STREET
JAMAICA, LONG ISLAND
NEW YORK

FILE O.K.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	P.P. OR EXP., INS.	F.O.B.	P.S.	TERMS
8/9/65					n/30
QUANTITY ORDERED	MATERIAL				PRICE
	NASA XXXXXXXXXXXXXXXXXXXX NAS8-20099				
✓ 2 EA.	ANDERSON GREENWOOD THREE VALVE MANIFOLDS X TYPE M-1 ALL 316 STAINLESS STEEL BONNET, BODY AND STEM. TEFLON PACKING AND KEL-F SEATS (PRICE QUOTED TO OUR MR. H. BRUECHER)				\$66.60 EA.
✓ 3 COPIES	MFR'S. DRAWINGS OF ABOVE MANIFOLDS. PLEASE MAIL AT ONCE PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.				NO CHARGE

2100000000



PURCHASE ORDER

163367

AIR REDUCTION COMPANY
INCORPORATED

DATE

8/17/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

POWER DRAULICS, INC.
420 NORTHERN BOULEVARD
GREAT NECK, LONG ISLAND
NEW YORK

SHIP TO

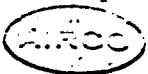
SAME AS ABOVE

CHARGE AND BILL TO:

~~POWER DRAULICS, INC.~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
9/9/65	U.P.S.	P.S.	n/30
QUANTITY ORDERED	MATERIAL	PRICE	
1 ONLY	NASA XXXXXXXXXXXXXXX NAS8-20099 CERCHIE SEAL RELIEF VALVE TYPE 520T-4MP-60, SET TO RELIEVE AT 60 PSIG, 1/2" NPT, 303 STAINLESS STEEL WITH TEFLON "O" RING, <u>DEGREASE FOR OXYGEN SERVICE</u> SET-UP CHARGE PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.	\$38.40 EA 5.00 NE	



163391

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
 PURCHASING DEPARTMENT
 MURRAY HILL, N. J.

DATE 8/20/65

FILE

MOORE PRODUCTS CO.
 2720 MORRIS AVENUE
 UNION, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
8 9/1/65	P.P. OR EXP., INS.	P.S.	n/30

QUANTITY ORDERED	MATERIAL	PRICE
1 ONLY	XXXXXXXXXXXXXXXXXXXX NAS8-20099 CONFIRMATION PHONE MR. DODGE, 8/19/65 MOORE MANUAL LOADING STATION TYPE 473K15, COMPLETE WITH GAGE FOR PANEL MOUNTING, FOR 3-15 PSIG AIR TO OPEN VALVE PRIORITY RATING DK-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION I.	\$80.00 EA. NET

AIRBO

163419

PURCHASE ORDER

AIR REDUCTION COMPANY
INCORPORATEDDATE 8/23/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

VALCOR ENGINEERING CO.
365 CARNEGIE AVENUE
KENILWORTH, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

9/10/65

SHIP VIA

U.P.S.

F.O.B.

P.S.

TERMS

n/30

QUANTITY
ORDERED

NASA

MATERIAL

XXXXXXXXXXXXX NAS8-23574 20099

PRICE

2 EA.

CONFIRMATION PHONE MR. PARRILL, 8/20/65

VALCOR SOLENOID VALVES, MODEL 90C-89C-7F, ALL
STAINLESS CONSTRUCTION, 1/2" FPT EITHER END,
LOX CLEANED.\$120.00 EA.
NETPRIORITY RATING BEE BX-AE (SATURN) CERTIFIED FOR
NATIONAL DEFENSE UNDER DMS REGULATION 1.



SUPPLEMENT NO. 1
TO P.O. NO. 163419

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
PURCHASING DEPARTMENT
MURRAY HILL, N. J.

DATE 3/27/65

245-1661

VALCOR ENGINEERING CO.
365 CARNEGIE AVENUE
KENILWORTH, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	9/10/65	SHIP VIA	U.P.S.	F.O.B.	P.S.	TERMS	n/30
	QUANTITY ORDERED	MATERIAL				PRICE	
		NASA /XXXXXXXXXXXXXXXXX NAS8-20099 PLEASE ADD TO THE SUBJECT PURCHASE ORDER: PROVIDE THREE (3) COPIES OF OPERATING INSTRUCTIONS INSTRUCTIONS, SPARE PARTS LISTS AND DRAWINGS AT NO CHARGE. PLEASE MAIL AT ONCE. PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.				NO CHARGE	



163453

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
PURCHASING DEPARTMENT
MURRAY HILL, N. J.

DATE 8/23/65

FILE

UNIFLOW VALVE CORP.
49 WEBSTER AVENUE
CRANFORD, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

INCORPORATED
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	10/4/65	SHIP VIA	MOTOR FREIGHT	F.O.B.	CRANFORD, N. J.	TERMS	1/2-10
	QUANTITY ORDERED	MATERIAL				PRICE	
	1 ONLY	NASA XXXXXXXXXXXXXXXXX NAS8-20099 ===== PRICES PER MR. THOMAS 8/16/65 TO OUR MR. J.SIMA UNIFLOW TYPE 800 BARSTOCK CONTROL VALVE 1/2" PIPE FEMALE END CONNECTIONS, 316 STAINLESS STEEL BODY AND TRIM, EQUAL PERCENTAGE PLUS, VALVE TO CLOSE ON AIR FAILURE, TEFLON CHEVRON PACKING, 8" EXTENSION FOR CRYOGENIC SERVICE, FULL PORT OPENING, DEGREASE FOR OXYGEN SERVICE, 3-15 PSIG AIR OPERATOR, REF. NO. 65- 9271 PROVIDE 3 COPIES OF OPERATING INSTRUCTIONS, VENDOR'S DRAWINGS AND SPARE PARTS LISTS 2 WEEKS AFTER RECEIPT OF ORDER. PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.				\$201.00 EA. NET NO CHARGE	

AIRCO

176266

PURCHASE ORDER

10/27/65 AIR REDUCTION COMPANY
INCORPORATED

DATE _____

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

ACE SCIENTIFIC SUPPLY CO., INC.
1420 EAST LINDEN AVENUE
LINDEN, N. J.
ATT: MR. LOWENSTEIN

SHIP TO

CHARGE AND BILL TO:

SAME AS ABOVE

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

11/2/65

SHIP VIA

YOUR TRUCK

F.O.B.

DEST.

TERMS

n/30

QUANTITY
ORDERED

MATERIAL

PRICE

1 ONLY

NASA

XXXXXXXXXXXXXXXXX NAS8-20099

MASTER APPLIANCE CORP. HEAT GUN, 110/120 VOLTS,
AC-DC, MODEL NO. HG-501-L, ACE SCIENTIFIC #17-8945PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR
NATIONAL DEFENSE UNDER DMS REGULATION 1.45.35
\$40.25 EA.
NET

SUPPLEMENT NO. 1TO P. O. NO. 176266

PURCHASE ORDER

AIR REDUCTION COMPANY
INCORPORATED

DATE

11/9/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

ACE SCIENTIFIC SUPPLY CO., INC.
1420 EAST LINDEN AVENUE
LINDEN, N. J.
ATT: MR. LOWENSTEIN

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

XXXXXXXXXX
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

11/2/65

SHIP VIA

YOUR TRUCK

F.O.B.

DEST.

TERMS
n/30QUANTITY
ORDERED

MATERIAL

PRICE

PLEASE CHANGE PRICE ON THE SUBJECT PURCHASE
ORDER TO READ \$45.35 EA. INSTEAD OF \$40.25 EA.
(FOR RECORD PURPOSES ONLY)



176798

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 12/2/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

JONES & AUERBACHER CO.
46 EDISON PLACE
NEWARK, N. J.
ATT: MR. CHUTAK

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
12/15/65	YOUR TRUCK			2/10
QUANTITY ORDERED	MATERIAL	PRICE		
1 ONLY	COMPLETE IMPERIAL 37° FLARE KIT INCLUDING BAR AND YOKE MODEL 447-F NASA XXXXXXXXXXXXXXXXX NAS8-20099 PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.	\$33.60 LOT		

W. Putignano

3. CANCELLED



PURCHASE ORDER

159083

AIR REDUCTION COMPANY
INCORPORATED

DATE

6/23/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

ALLOY STEEL PRODUCTS CO.
1300 WEST ELIZABETH AVENUE
LINDEN, N. J.
ATT: MR. DE FRANCE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~KINDSUNSTOCK~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

7/23/65

SHIP VIA

MOTOR FREIGHT

F.O.B.

P.S.

TERMS

2/10

QUANTITY
ORDERED

MATERIAL

PRICE

2 EA.

ALOYCO FIG. #340EB 150# EXTENDED BONNET GLOBE
VALVE, 3/4" NPT, 316 STAINLESS STEEL WITH VIRGIN
TEFLON PACKING, STANDARD LENGTH BONNET EXTENSION,
SCREWED CONNECTION, DEGREASE FOR OXYGEN SERVICE.
PRICE INCLUDES DEGREASING

\$117.00 EA.

3 COPIES

MANUFACTURER'S DRAWING OF ABOVE VALVE (PLEASE MAIL
AT ONCE)

NO CHARGE

sent to H.B. 6/29

AIRCO

SUPPLEMENT NO. 1

TO P.O. NO. 159083

PURCHASE ORDER

AIR REDUCTION COMPANY
INCORPORATED

DATE

10/8/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

ALLOY STEEL PRODUCTS CO.
1300 WEST ELIZABETH AVENUE
LINDEN, N. J.
ATT: MR. DE FRANCE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

XXXXXXXXXXXX
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

7/23/65

SHIP VIA

MOTOR FREIGHT

P.O.D.

P.S.

TERMS
2/10QUANTITY
ORDERED

MATERIAL

PRICE

-CONFIRMATION PHONE MR. WILLIAM P. FRANCE, 10/6/65

PLEASE CANCEL SUBJECT PURCHASE ORDER FOR 2 EA.
ALOYCO FIG. #340EB, 150# EXTENDED BONNET GLOBE
VALVE 3/4", NPT 316 S.S. WITH A VIRGIN TEFLON
PACKING, STANDARD LENGTH BONNET EXTENSION,
SCREWED CONNECTION, DECREASE FOR OXYGEN SERVICE,
PRICE INCLUDES DECREASING AT \$117.00 EA.

3 COPIES MANUFACTURERS DRAWINGS OF ABOVE VALVE
(PLEASE MAIL AT ONCE) NO CHARGE

(VENDOR DID NOT MEET WANTED DATE)

AIRCO

159084

PURCHASE ORDER

AIR REDUCTION COMPANY
INCORPORATED

DATE

6/23/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

DANIEL ORIFICE FITTING CO.
c/o BLAKE EQUIPMENT CORP.
75 GRAND AVENUE
ENGLEWOOD, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~ADMINISTRATIVE~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

7/7/65

SHIP VIA

P.P. OR EXP., INS.

F.O.B.

P.S.

TERMS

n/30

QUANTITY
ORDERED

MATERIAL

PRICE

2 EA.

DANIEL TRI VALVES TYPE 1500 TW-3, 303 STAINLESS
STEEL, VIRGIN TEFLON SEALS AND PACKING, 1/4" NPT
DECREASE FOR OXYGEN SERVICE

\$42.00 EA.

CHARGE FOR DEGREASING ABOVE VALVES

10.00 EA.

3 COPIES MANUFACTURER'S DRAWING OF ABOVE VALVE (PLEASE MAIL
AT ONCE)

NO CHARGE



SUPPLEMENT NO. 1
TO P.O. NO. 159084

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 7/23/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

DANIEL ORIFICE FITTING CO.
c/o BLAKE EQUIPMENT CO.
75 GRAND AVENUE
ENGLEWOOD, N. J.

FILE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXXXXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	<u>7/7/65</u>	SHIP VIA	<u>P.P. OR EXP., INS.</u>	F.O.B.	<u>P.S.</u>	TERMS	<u>n/30</u>
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QUANTITY ORDERED	MATERIAL	PRICE
	REF: VENDOR'S LETTER 7/12/65 SIGNED BY MR. RIETHOF PLEASE CANCEL THE SUBJECT PURCHASE ORDER. VENDOR NOT ABLE TO SUPPLY THIS EQUIPMENT AS SPECIFIED.	

REJECTED MATERIAL NOTICE

No 9544

AIR REDUCTION CO., INC., MURRAY HILL, N.J.

DIVISION

ADDRESS

Date 12/14/65

Received from LOUIS HEIN CO., 2 PLEASANT AVENUE, CLIFTON, N. J.

R. V. No. Date 12/14/65 Purch. Ord. No. 176490 For Dept. CRE 36

Return to SAME AS ABOVE

Via U. P. S.

☐ For Replacement
☒ For Credit

TOTAL QUANTITY RECEIVED	QUANTITY REJECTED	DESCRIPTION OF MATERIAL ORDERED	REASON FOR REJECTION OR DESCRIPTION OF MATERIAL RECEIVED
1 ONLY	1 ONLY	37° FLARE TOOL KIT MODEL 2343 FOR 1/8", 3/16"	<i>copy phone m. Re L + 12/23/65</i> ORDERED IN ERROR
1 ONLY	1 ONLY	DITTO, MODEL 410A, FOR 1/4" TO 5/8"	
RETURN OF MATERIAL APPROVED <u> </u> DATE <u>12/23/65</u>			SIGNED <u>J. SIMA</u> INSPECTOR S. O. No. <u> </u> DATE <u> </u>

1. THIS COPY FOR PURCHASING DEPT.



176490

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
PURCHASING DEPARTMENT
MURRAY HILL, N. J.

DATE 11/15/65

LOUIS ISEIN CO.
2 PLEASANT AVENUE
CLIFTON, N. J.

SHIP TO

SALE AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
11/15/65	U.P.S.	P.S.	n/30
QUANTITY ORDERED	MATERIAL	PRICE	
	NASA XXXXXXXXXXXXXXXXX NAS8-20099		
	CONFIRMATION PHONE MR. ROBT, 11/12/65		
1 ONLY	37° FLARE TOOL KIT MODEL 2343, FOR 1/8", 3/16"	\$12.50 EA.	
1 ONLY	37" FLARE TOOL KIT, MODEL 410A, FOR 1/4" TO 5/8"	18.00 EA.	
PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.			

[Handwritten signature]

REJECTED MATERIAL NOTICE

N^o 9543

AIR REDUCTION CO., INC., MURRAY HILL, N. J.

DIVISION

ADDRESS

Date 12/14/65

Received from HALOCARBON PRODUCTS, INC., 82 BURLEWS COURT, HACKENSACK, N. J.

R. V. No. _____ Date 12/7/65 Purch. Ord. No. 176826 For Dept. CRE 36

Return to SAME AS ABOVE

Via OUR TRUCK

☐ For Replacement
☒ For Credit

TOTAL QUANTITY RECEIVED	QUANTITY REJECTED	DESCRIPTION OF MATERIAL ORDERED	REASON FOR REJECTION OR DESCRIPTION OF MATERIAL RECEIVED
2 LBS.	2 LBS.	HALOCARBON OIL, SERIES 13-21	VENDOR SENT SERIES 13-21E CONFIRMATION PHONE MRS. STANELY, 12/14/65 J. SIMA SIGNED _____ INSPECTOR

RETURN OF MATERIAL
APPROVED

12/14/65
DATE

S. O. No. _____
DATE _____

1. THIS COPY FOR PURCHASING DEPT.



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

176826

DATE 12/8/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

HALOCARBON PRODUCTS, INC.
82 BURLING COURT
HACKENSACK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~AMERICAN~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
12/13/65	P.P. OREXP., INS.	P.S.	n/30
QUANTITY ORDERED	MATERIAL		PRICE
2 LBS.	NASA XXXXXXXXXXXXXXXXX NAS8-20099 HALOCARBON OIL, SERIES 13-21 PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1		\$24.00 LOT

R/E-Walt

4. CONSUMABLES



PURCHASE ORDER

158949

AIR REDUCTION COMPANY
INCORPORATED

DATE 6/17/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.ELECTRON TECHNOLOGY, INC.
626 SCHUYLER AVENUE
KEARNEY, N. J.

FILE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
6/24/65	U.P.S.	P.S.	1/10
QUANTITY ORDERED	MATERIAL	PRICE	
✓ 7 EA.	CONFIRMATION PHONE MR. PERRY, 6/16/65 STANDARD PYREX-KOVAR SEALS, KOVAR O.D. TO BE 0.750 INCHES, AS SHOWN ON E.T.I. INFORMATION SHEET #2M-10-63	\$7.10 EA.	
✓ 20 EA.	STANDARD PYREX-KOVAR SEALS, KOVAR O.D. TO BE 0.250 INCHES, AS SHOWN ON E.T.I. INFORMATION SHEET #2M-10-63	4.05 EA.	



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

159134

DATE 6/30/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

TUBE SALES CO.
456 NORDHOFF PL.
ENGLEWOOD, NEW JERSEY

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/2/65	TAKE YOUR TRUCK	DEST.	1/2-10
QUANTITY ORDERED	MATERIAL	PRICE	
CONFIRMATION PHONE MR. KOEL 6/29/65			
67 ft. 3 EA. ✓	20 FT. LENGTHS 1/8" O.D. STAINLESS STEEL TUBING, SEAMLESS, TYPE 304 ANNEALED, .035" WALL	\$62.37	CFT.
168 ft. 8 EA. ✓	20 FT. LENGTHS 1/4" O.D. STAINLESS STEEL TUBING, SEAMLESS, TYPE 304 ANNEALED, .035" WALL.	73.14	CFT.
37 ft. 2 EA. ✓	20 FT. LENGTHS 3/8" O.D. STAINLESS STEEL TUBING, SEAMLESS, TYPE 304, ANNEALED .035" WALL.	109.46	CFT.
40 ft. 3 EA. ✓	20 FT. LENGTHS 1/2" O.D. STAINLESS STEEL TUBING, SEAMLESS, TYPE 304, ANNEALED .035" WALL.	119.00	CFT.

AIRCO

PURCHASE ORDER

159202

AIR REDUCTION COMPANY
INCORPORATED

DATE

7/5/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

FREDERICK ROEMER
19 SHADOWLAWN DRIVE
COLONIA, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

7/16/65

SHIP VIA

YOUR TRUCK

F.O.B.

DEST.

TERMS

n/30

QUANTITY
ORDERED

MATERIAL

PRICE

PLEASE PROVIDE THE FOLLOWING FRONT FERRULES ONLY
FOR SWAGELOK TYPE FITTINGS, MATERIAL TO BE KEL-F:

✓ 10 PCS.	FOR 3/4" O.D. TUBING	\$1.60 PC.
✓ 10 PCS.	FOR 1/2" O.D. TUBING	.80 PC.
✓ 50 PCS.	FOR 1/4" O.D. TUBING	.50 PC.
✓ 15 PCS.	FOR 1/8" O.D. TUBING	.50 PC.



PURCHASE ORDER

159329

AIR REDUCTION COMPANY
INCORPORATEDDATE 7/12/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

FRANCIBLE DISCS, INC.
7 ALANNING AVENUE
PENNS GROVE, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

DIVISION OF
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

1/2-10

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/23/65	P.P., INS.	P.S.	n/30

QUANTITY ORDERED

NASA

MATERIAL

PRICE

XXXXXXXXXXXXXXXXX NAS8-20099

1 ONLY

1 ONLY

PLEASE REWORK/RUPTURE DISC HOLDER FOR LOW PRESSURE SERVICE

\$2.00 EA.

(SHIPPED TO VENDOR ON OUR RMN 65-207)

5 EA.

1/2" ALUMINUM DISCS FOR ABOVE HOLDER FOR BURSTING AT 5 PSIG ~~REWORK~~ 72°F

.75 EA.

5 EA.

1/2" ALUMINUM DISCS FOR ABOVE HOLDER FOR BURSTING AT 8 PSIG AT 72°F

.75 EA.

RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION #1



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
PURCHASING DEPARTMENT
MURRAY HILL, N. J.

162946

FILE

DATE 7/21/65

CHASE BRASS & COPPER CO.
188 BADGER STREET
NEWARK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
7/22/65	YOUR TRUCK	DEST.	n/30
QUANTITY ORDERED	MATERIAL	PRICE	
8 LBS.	NASA XXXXXXXXXXXXXXXXXXXX NAS8-20099 CONFIRMATION PHONE MR. HERICH, 7/20/65 SOLID, ROUND 1/8" DIAMETER COPPER ROD PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.	\$15.00 LOT	



162981

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 7/22/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FREDERICK ROEMER
19 SHEDDENLAWN DRIVE
COLONIA, N. J.

FILE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

7/26/65

SHIP VIA

P.P. OR EXP., INS.

F.O.B.

P.S.

TERMS

n/30

QUANTITY
ORDERED

MATERIAL

PRICE

NASA

XXXXXXXX NAS8-20099

PRICE QUOTED TO OUR MR. BRUECHER, 7/20/65

PLEASE PROVIDE TWO (2) EACH OF THE SEALS, WRAPINGS
AND SEALS AS SHOWN ON BELAND-GIFFORD DWGS.

NO. 50-44-0-10, NO. 25-44-0-14, NO. 25-44-0-13,
NO. 25-44-0-12, NO. 25-44-0-11 AND NO. 50-44-0-15S
ALL IN YOUR POSSESSION. MATERIAL TO BE KEL-F

\$60.00 LOT



124319

ONE-36

2.

163068

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 8/3/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

LIMESTONE PRODUCTS, INC.
122 MAIN STREET
NEWTON, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
8/5/65	MOTOR FREIGHT			n/30
QUANTITY ORDERED	MATERIAL			PRICE
✓ 3 TONS	CONFIRMATION PHONE MR. CORIELL 8/2/65 LIMESTONE 3/4" SIZE			\$44.80 LOT



PURCHASE ORDER

163395

AIR REDUCTION COMPANY

INCORPORATED

DATE

8/20/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

LAUREL WHOLESALE HARDWARE CO.

~~XXXXXXXXXXXXXXXXXXXX~~

367 SOMERSET STREET

N. PLAINFIELD, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXXXX~~
 AIR REDUCTION COMPANY
 INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	YOUR TRUCK	F.O.B.	DEST.	TERMS
8/23/65					2/10
QUANTITY ORDERED	MATERIAL				PRICE
	NASA XXXXXXXXXXXXXXXXXXXX NAS8-20099				
	CONFIRMATION PHONE MRS. DOT KAHN, 8/19/65				
32 EA.	5/16"-NC-18 HEX HEAD BOLTS 3/4" LG, 316 STAINLESS STEEL				\$.13 EA.
16 EA.	3/8"-16-NC DITTO				.15 EA.
24 EA.	3/4"-10-NC HEX HEAD BOLTS 2" LG., STEEL				.16 EA.
16 EA.	3/4" NUTS FOR ABOVE				.10 EA.
240 EA.	1/4"-20-NC HEX HEAD BOLTS, 3/4" LG., STEEL				.90 C
PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.					



PURCHASE ORDER

163434

AIR REDUCTION COMPANY
INCORPORATED

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

DATE

8/20/65

HALOCARBON PRODUCTS CORP.
82 BURELMS COURT
HACKENSACK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	8/30/65	SHIP VIA	P.P. OR EXP., INS.	F.O.B.	P.S.	TERMS	n/30
	QUANTITY ORDERED	MATERIAL				PRICE	
	4 LBS.	NASA XXXXXXXXXXXXXXXXX NAS8-22073 20099 HALOCARBON OIL SERIES 13-21 AT \$12.00 LB. DX-AE PRIORITY RATING/REMARK (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.				\$48.00 NET TOTAL	



163537

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
PURCHASING DEPARTMENT
MURRAY HILL, N. J.

DATE 8/31/65

FILE

PETER A. FRASSE, INC.
17 GRAND STREET
NEW YORK, N. Y.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
9/7/65	VENDOR'S TRUCK			1/2-10
QUANTITY ORDERED	MATERIAL			PRICE
47 ft. 2 EA.	NASA XXXXXXXXXXXXXXXXX NAS8-20099 20 FT. LENGTHS 1/2" IPS SCHEDULE 10S PIPE, 316 STAINLESS STEEL, RANDOM LENGTHS TO 22 FT. ACCEPTABLE PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.			\$424.69 CFT

47 ft



PURCHASE ORDER

163735

AIR REDUCTION COMPANY
INCORPORATED

DATE 9/16/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

CRANE PACKING CO.
185 SOUTH NEWMAN STREET
WACKENSACK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	9/28/65	SHIP VIA	P.P., INS.	F.O.B.	P.S.	TERMS	n/30
	QUANTITY ORDERED	MATERIAL				PRICE	
	22	NASA XXXXXXXXXXXXXXXXX NAS8-20099					
	✓ 4 SPOOLS	CRANE PACKING CO. ZIP JOINT, 1/4" DIA. x 25 FT. LG PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.				\$15.53 EA. SPOOL	

Q. 510

REG. NO

290367

CHARGE ACCOUNT NO.

CHE 36

2



PURCHASE ORDER

175949

AIR REDUCTION COMPANY
INCORPORATED

DATE 10/8/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

SILBRICO CORPORATION
5901 WEST 66TH STREET
CHICAGO, ILLINOIS

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
10/20/65	MOTOR TRUCK	DEM P.S.	n/30
QUANTITY ORDERED	MATERIAL	PRICE	
20 BAGS 20 BIX	NASA XXXXXXXXXXXXXXXXXXXXX NAS8-20099 "RYOLEX" INDUSTRIAL DEM PEARLITE NO; 3S, EACH BAG CONTAINS APPROX. 4 FT.3 PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.	\$1.27 BAG XXXXX	

Handwritten signature: T. E. Walsh



175991

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 10/12/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

CONSOLIDATED VACUUM CORP.
26 LINDEN AVENUE
SPRINGFIELD, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED 10/25/65 SHIP VIA AIR P.P., INS. F.O.B. P.S. TERMS n/30

QUANTITY ORDERED

MATERIAL

PRICE

NASA

XXXXXXXXXXXXXXXXX NAS8-20099

7 EA. ✓ #15882-2110 "O" RING

\$.50 EA.

7 EA. ✓ #15882-2211 "O" RING

.50 EA.

7 EA. ✓ #15882-2342 "O" RING

.50 EA.

PRIORITY RATING DX-A2 (SATURN) CERTIFIED FOR
NATIONAL DEFENSE UNDER DMS REGULATION 1.

R. E. Weller

TO P. O. NO. 175991

AIR REDUCTION COMPANY
INCORPORATED

MURRAY HILL, N. J.

FILE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

TERMS
n/30

PRICE

XXXXXXXXXXXX NAS8-20099

PRIORITY RATING DX-A2 (SATURN) CERTIFIED FOR
NATIONAL DEFENSE UNDER DMS ~~INTELLIGENCE~~ REGULATION 1.



PURCHASE ORDER

176021

AIR REDUCTION COMPANY
INCORPORATED

DATE 10/18/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

R. A.

FILE

HALOCARBON PRODUCTS CORP.
82 BURLING COURT
HACKENSACK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	10/15/65	SHIP VIA	OUR MR. SIMA	TERM	P.S.	n/30
	QUANTITY ORDERED	MATERIAL				PRICE
		NASA XXXXXXXXXXXXXXXXX NAS8-20099				
	12 LBS.	CONFIRMATION PHONE MRS. FERRO, 10/15/65 HALOCARBON OIL SERIES 13-21 AT \$12.00 LB.				\$144.00 NET TOTAL
		PRIORITY RATED DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.				

R. E. Weller



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

176132

DATE 10/22/65

PURCHASING DEPARTMENT
 MURRAY HILL, N. J.

FIVE

SCIENTIFIC GLASS APPARATUS CO., INC.
 735 BROAD STREET
 BLOOMFIELD, NEW JERSEY

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
 AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	10/21/65	SHIP VIA	OUR MESSENGER	F.O.B.	P.S.	TERMS	n/30
	QUANTITY ORDERED	NASA	MATERIAL				PRICE
		XXXXXXXXXXXXX NAS2-20099					
		KOVAR TO PYREX GLASS SEALS SCIENTIFIC GLASS CAT. NO. G-8770 AS FOLLOW:					
	6 EA. ✓	SEALS 0.750" OD KOVAR TO 20 MM OD XX PYREX					38.99 EA.
	18 EA. ✓	SEALS 0.250" OD KOVAR TO 8 MM OD PYREX					4.49 EA.
		PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.					
		<u>CONFIRMATION PHONE MR. HUTCHINSON 10/21/65</u>					

R. E. Weir



176148

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 10/21/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

FREDERICK ROEMER
19 SHADOWLAWN DRIVE
COLOMIA, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	10/29/55	SHIP VIA	P.P. OR EXP., INS.	F.O.B.	SAME ADDRESS AS ABOVE P.S.	TERMS n/30
	QUANTITY ORDERED	MATERIAL				PRICE
	20 PCS.	NASA XXXXXXXXXXXXX NAS8-20099 FRONT FERRULES ONLY FOR SWAGelok TYPE FITTINGS MATERIAL KEL-F GRADE 6060, TO FIT SIZE 1/8" O.D. TUBING PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.				\$.50 PC.

R. E. Wood



PURCHASE ORDER

176165

AIR REDUCTION COMPANY
INCORPORATEDDATE 10/27/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

F. J. GRAY & CO.
182 SOUTH PORTLAND AVENUE
BROOKLYN, NEW YORK

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
11/1/65	U.P.S.	P.S.	1/10
QUANTITY ORDERED	MATERIAL	PRICE	
	NASA XXXXXXXXXXXXXXXXXXXXX NAS8-20099 CONFIRMATION PHONE MR. SCHRAUTH, 10/26/65 6 PCS. PRECISION GROUND XXXXXX (.750 $\pm$.005, $\pm$.000 O.D.) #7740 /GLASS TUBING, WALL THICK. 1/8" NOM. x 4" LG. PYREX 12 PCS. PRECISION GROUND #7740 PYREX GLASS TUBING (.375 $\pm$.005, $\pm$.000 O.D.) x 0.219 I.D. x 4" LG. NOTE: PRECISION GRIND ON OUTSIDE ONLY. PRIORITY RATING DX-AE (SATURN)- CERTIFIED FOR NATIONAL XXXXXXXXXXXXXXXXXXXXX DEFENSE UNDER DMS REGULATION 1.	\$15.00 PC. 	



176287

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 10/28/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

FREDERICK ROEMER
19 SHADOWLAWN DRIVE
COLONIA, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~FREDERICK ROEMER~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	SAME ADDRESS AS ABOVE	TERMS
11/2/65	P.P. OR EXP., INS.	P.S.		n/30
QUANTITY ORDERED	MATERIAL	PRICE		
	NASA XXXXXXXXXXXXX NAS8-20099			
15 PCS. ✓	FRONT FERRULES ONLY FOR SWAGELOK TYPE FITTINGS FOR 3/4" O.D. TUBING	\$1.60 PC.		
30 PCS. ✓	DITTO FOR 3/8" O.D. TUBING	.75 PC.		
	MIL-F GRADE 6060 MATERIAL DELIVERED TO VENDOR BY OUR MR. MARANCY.			
	PRIORITY RATING DX-A2 (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.			



176342

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
 PURCHASING DEPARTMENT
 MURRAY HILL, N.J.

11/1/65
 11/2/65
 DATE _____

ELECTRON TECHNOLOGY, INC.
 626 SCHUYLER AVENUE
 KEARNEY, N. J.
 ATT: MR. PERRY

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	P.P. OR EXP., INS.	F.O.B.	P.S.	TERMS
					n/30
QUANTITY ORDERED	MATERIAL				PRICE
	NASA XXXXXXXXXXXXXXXXX NAS8-20099				
20 EA.	HOUSEKEEPER SEALS, PYREX GLASS TO 1/4" O.D. COPPER TUBE				\$10.00 EA.
6 EA.	HOUSEKEEPER SEALS, PYREX GLASS TO 3/4" O.D. COPPER TUBE				16.00 EA.
PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.					

A.E. Wood

SUPPLEMENT NO. 1TO P. O. NO. 176342

PURCHASE ORDER
AIR REDUCTION COMPANY
 INCORPORATED

DATE 3/10/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

ELECTRON TECHNOLOGY, INC.
 626 SCHUYLER AVENUE
 KEARNEY, N. J.
 ATT: MR. PERRY

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
 INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED <u>12/5/65</u>	SHIP VIA <u>P.P. OR EMP., INS.</u>	F.O.B. <u>P.S.</u>	TERMS <u>n/30</u>
----------------------------	------------------------------------	--------------------	-------------------

QUANTITY ORDERED

MATERIAL

PRICE

NASA

~~XXXXXXXXXXXXXXXXXXXX~~ NAS8-20099

CONFIRMATION PHONE MR. PERRY, 3/7/66

PLEASE CHANGE ITEMS 1 & 2 ON THE SUBJECT PURCHASE ORDER TO READ AS FOLLOWS:

14 EA.	HOUSEKEEPER SEALS, PYREX GLASS TO 1/4" O.D. COPPER TUBE	\$10.00 EA.
--------	---	-------------

INSTEAD OF
 20 DITTO AT \$10.00 EA.

4 EA.	DITTO, 3/4" COPPER TUBE	16.00 EA.
-------	-------------------------	-----------

INSTEAD OF
 6 EA. DITTO AT \$16.00 EA.

(BALANCE NO LONGER NEEDED)

PRIORITY RATING EX-AE (SATURN) CERTIFIED FOR
 NATIONAL DEFENSE UNDER DMS REGULATION 1.



176479

PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

DATE 11/15/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

F. J. GRAY CO.
182 S. PORTLAND STREET
BROOKLYN, NEW YORK
ATT: MR. SCHRAUTH

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
11/17/65	OUR MESSENGER	P.S.	1/10
QUANTITY ORDERED	MATERIAL	PRICE	
	NASA XXXXXXXXXXXXXXXXXXXXX NAS8-XX 20099		
✓ 6 PCS.	CONFIRMATION PHONE MR. SCHRAUTH, 11/10/65 PRECISION GROUND GRADE #7740 PYREX GLASS TUBING, (O.D.=0.750" +.005 -.000") x 1/8" NOMINAL WALL x 4" LONG	\$15.00 EA	
✓ 18 PCS.	PRECISION GROUND GRADE #7740 PYREX GLASS TUBING, (O.D.=.375" +.005 -.000) x .219" I.D. x 4" LONG (PRECISION GROUND OUTSIDE SURFACES ONLY) PRIORITY RATING DX-A2 (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.	12.50 EA	

R/S. Welch



PURCHASE ORDER

AIR REDUCTION COMPANY

INCORPORATED

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

176713

DATE 11/24/65

FILE

FREDERICK ROEMER E
 19 SHADOWLAWN DRIVE
 COLONIA, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AEROSPACE
 AIR REDUCTION COMPANY
 INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	SAME ADDRESS AS ABOVE	TERMS
11/17/65	OUR MR. SEMA	P.S.		n/30
QUANTITY ORDERED	MATERIAL	PRICE		
	NASA /XXXXXXXXXXXXXXXXX NAS8-20099 PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1. <u>CONFIRMATION - WORK COMPLETED. 11/17/65</u> PLEASE PROVIDE THE FOLLOWING QUANTITIES OF BEARINGS, SEALS AND SEALS AS SHOWN ON LELAND GIFFORD DWGS. DWGS. & REL-F WITH MATERIAL FURNISHED BY US ARE IN VENDOR'S POSSESSION:			
4 EA.✓	SEALS, DWG. NO. 50-44-0-10			
2 EA.✓	BEARINGS, DWG. NO. 25-44-0-11			
2 EA.✓	BEARINGS, DWG. NO. 25-44-0-12			
2 EA.✓	SEALS, DWG. NO. 25-44-0-14 25-44-0-14			
4 EA.✓	SEALS, DWG. NO. 25-44-0-13			
2 EA.✓	BEARINGS AS PER SAMPLE SUPPLIED BY US			
TOTAL FOR ABOVE		\$75.00 LOT		

AIRCO

PURCHASE ORDER.

176777

AIR REDUCTION COMPANY
INCORPORATEDDATE 11/20/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

BANCROFT & MARTIN, INC.
SMITH STREET
BIDDEFORD, MAINE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE
WANTED

12/8/65

SHIP VIA

P.P.

F.O.B.

P.S.

TERMS

n/30

QUANTITY
ORDERED

MATERIAL

PRICE

XXXXXXXXXXXXXXXXXXXXX NAS8-20099

BANCROFT & MARTIN VALVE DIV. PARTS ~~SEE~~ AS FOLLOW:

2 EA. ✓

1/2" STAINLESS STEEL (316) SPHERES

\$2.90 EA.

2 EA. ✓

1/2" STAINLESS STEEL (316) SHAFTS

1.65 EA.

PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR
NATIONAL DEFENSE UNDER DMS REGULATION 1.

176785

DATE 12/1/65

MURRAY HILL, N. J.

FILE

FRED ROMER
19 SHADOWLAWN DRIVE
COLONIA, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

**AIR REDUCTION COMPANY
INCORPORATED**

SAME ADDRESS AS ABOVE

DATE
WANTED

11/23/65

SHIP VIA

YOUR TRECK

F.O.B.

P.S.

TERMS

 $n/30$

**QUANTITY
ORDERED**

MATERIAL

PRICE

NASA

XXXXXXXXXXXX NAS8-20099

CONFIRMATION - MATERIAL RECEIVED 11/23/65

PLEASE PROVIDE THE FOLLOWING QUANTITIES OF PARTS
AS SHOWN ON LELAND GIFFORD DRAWINGS. DWGS. AND
TEFLON MATERIAL IN YOUR POSSESSION:

3 EA. SEAFS, DMC. NO. 50-44-0-10

2 EA. ✓ SEALS, DWG. NO. 25-44-C-13

1 ONLY ✓ / SEAL, ENG. NO. 25-44-C-14

1 ONLY / BEARING, DWG. NO. 50-44-0-15-S

TOTAL FOR ALL ABOVE

\$28.00
NET TOTAL

PRIORITY RATING DX-AB(SATURN) CERTIFIED FOR
NATIONAL DEFENSE UNDER DMS REGULATION 1.



PURCHASE ORDER

176827

AIR REDUCTION COMPANY
INCORPORATEDDATE 12/1/65

PURCHASING DEPARTMENT

MURRAY HILL, N. J.

FILE

FREDERICK ROEMER
19 SHADOWLAWN DRIVE
COLONIA, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
12/10/65	YOUR TRUCK			n/30
QUANTITY ORDERED	MATERIAL			PRICE
	NASA XXXXXXXXXXXXXXXXX NAS8-20099			
	FABRICATE FRONT FERRULES ONLY FOR SWAGelok TYPE FITTINGS AS FOLLOW:			
15 PCS. ✓	FOR 3/4" O.D. TUBING			\$1.60 PC
30 PCS. ✓	FOR 3/8" O.D. TUBING			.75 PC
30 PCS. ✓	FOR 1/8" O.D. TUBING			.50 PC
	KEL-F GRADE 6060 MATERIAL DELIVERED TO VENDOR. BY AIR REDUCTION CO. PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.			



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED
PURCHASING DEPARTMENT
MURRAY HILL, N. J.

176889

DATE 12/13/65

FILE

BANCROFT & MARTIN CO.
BIDDLEFORD
MAINE

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	TERMS
12/17/65	AIR P.P., INS.	P.S.	n/30
QUANTITY ORDERED	MATERIAL		PRICE
	NASA XXXXXXXXXXXXXXXXXXXX NAS8-20099 PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1. CONFIRMATION PHONE 12/10/65 SUPPLY THE FOLLOWING PARTS FOR 1/2" BALL VALVE AS PER PHONE CONVERSATION OUR MR. SIMA WITH YOUR MR. WM. BRICE:		
1 ONLY	BODY, 50-44-XX-1		\$19.00 EA.
2 EA.	GLAND NUTS, 25-44-XX-5		1.25 EA.
2 EA.	STEMS, 50-44-XX-4		1.65 EA.
2 EA.	SPHERES, 50-44-XX-3		2.90 EA.
2 EA.	ENDS, 50-24-XX-2		24.00 EA.
	(MATERIAL - 316 STAINLESS STEEL)		

R. E. Wendt



PURCHASE ORDER
AIR REDUCTION COMPANY
INCORPORATED

176997

sub up

DATE 12/15/65

PURCHASING DEPARTMENT
MURRAY HILL, N. J.

FILE

HALOCARBON PRODUCTS CORP.
82 BURLING COURT
HACKENSACK, N. J.

SHIP TO

SAME AS ABOVE

CHARGE AND BILL TO:

~~XXXXXXXXXX~~
AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
12/15/65	OUR TRUCK			n/30
QUANTITY ORDERED	MATERIAL			PRICE
	NASA XXXXXXXXXXXXXXXXXXXX NAS8-20099			
✓ 8 LBS.	CONFIRMATION PHONE MRS. FERRO, 12/14/65			\$12.00 LB.
✓ 2 LBS.	HALOCARBON OIL NO. 13-21			12.00 LB.
	DITTO NO. 4-11			
	THIS OIL TO CONTAIN NO INHIBITORS			
	PRIORITY RATING BX-1E (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.			

J. STAR

230337

ONE 36

2

PURCHASE ORDER

177139

AIR REDUCTION COMPANY
INCORPORATED

FILE

12/23/65

DATE

PURCHASING DEPARTMENT
MURRAY HILL, N. J.FREDERICK ROEMER
19 SHADOWLAWN DRIVE
COLONIA, N. J.

SHIP TO

CHARGE AND BILL TO:

SAME AS ABOVE

AIR REDUCTION COMPANY
INCORPORATED

SAME ADDRESS AS ABOVE

DATE WANTED	SHIP VIA	F.O.B.	DEST.	TERMS
12/30/65	YOUR TRUCK			n/30
QUANTITY ORDERED	MATERIAL			PRICE
	XXXXXXXXXXXXXXXXX NAS8-20099			
	FABRICATE THE FOLLOWING PARTS FOR THE LELAND GIFFORD VALVE OF GRADE 6060 KEL-P. DRAWINGS AND MATERIAL FURNISHED BY AIRCO ARE IN VENDOR'S POSSESSION:			
6 EA.✓	SEATS, DMC. NO. 50-44-0-10			\$70.00 L
2 EA.✓	STEM SEALS, MED. DMC. NO. 25-44-0-14			
4 EA.✓	STEM SEALS, TOP-BOT. DMC. NO. 25-44-0-13			
	PRIORITY RATING DX-AE (SATURN) CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REGULATION 1.			

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16 - 30	Air Reduction Company, Inc. <u>Murray Hill</u>
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