

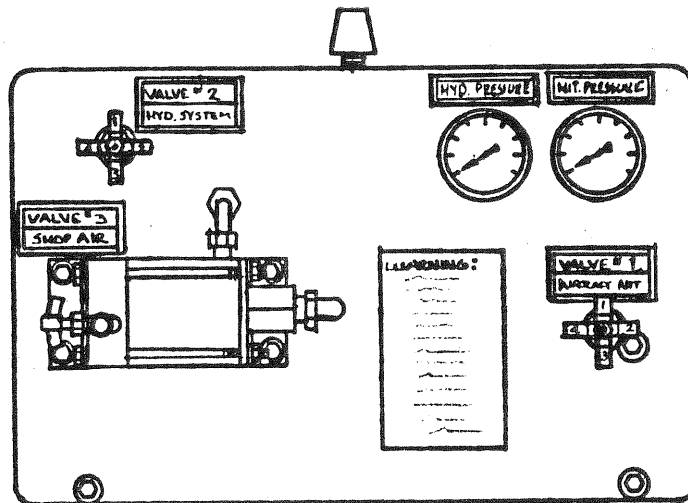
TRONAIR

OPERATION & SERVICE MANUAL WITH ILLUSTRATED PARTS LIST

MODEL:

99-9003-0100

PNEUMATIC NITROGEN CHARGER



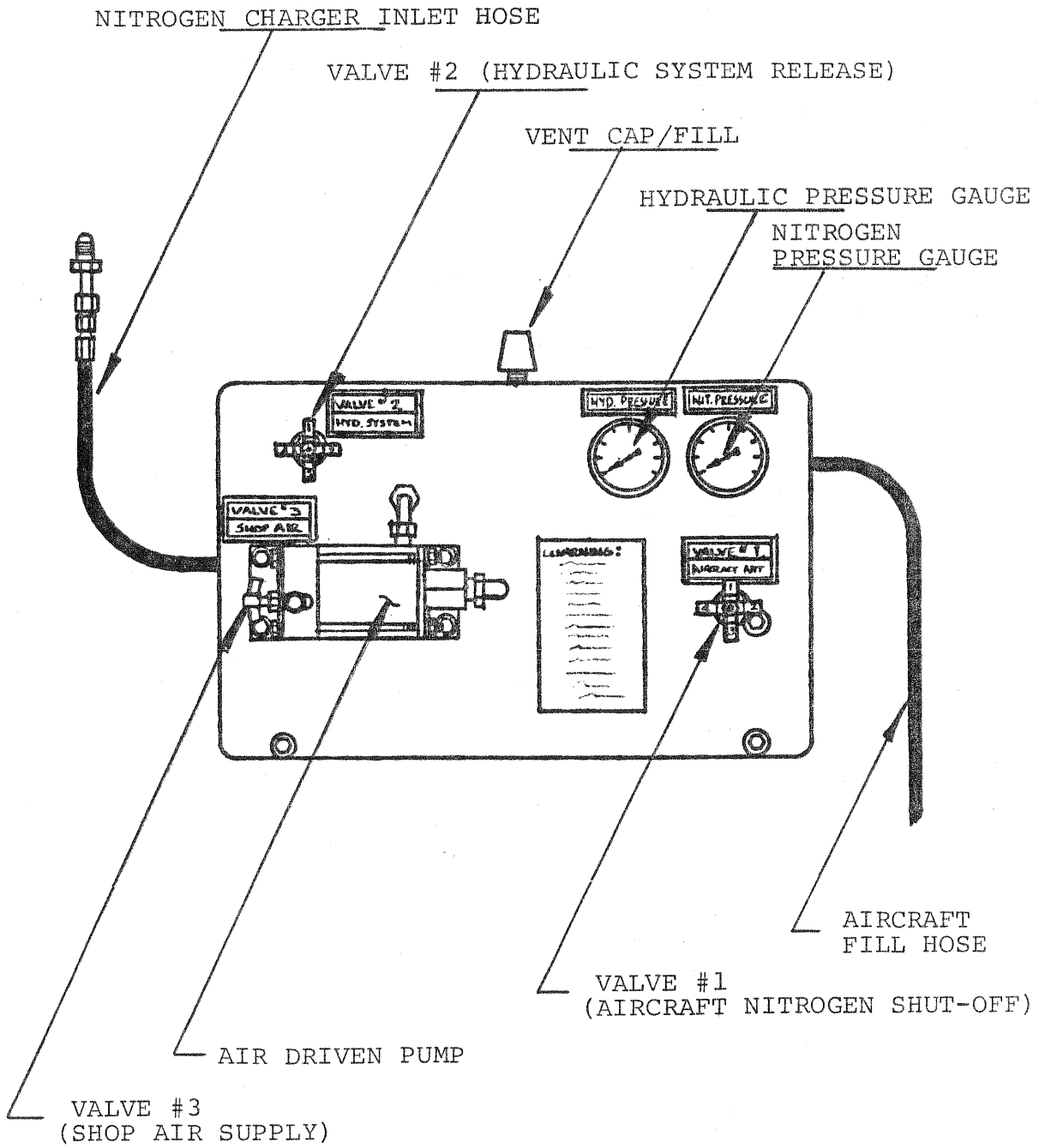
AIRCRAFT GROUND SUPPORT EQUIPMENT

South 1740 Eber Road • Holland, Ohio 43528
(419) 866-6301 • TWX: 810-440-2839

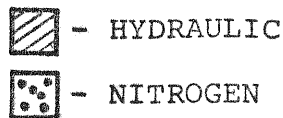
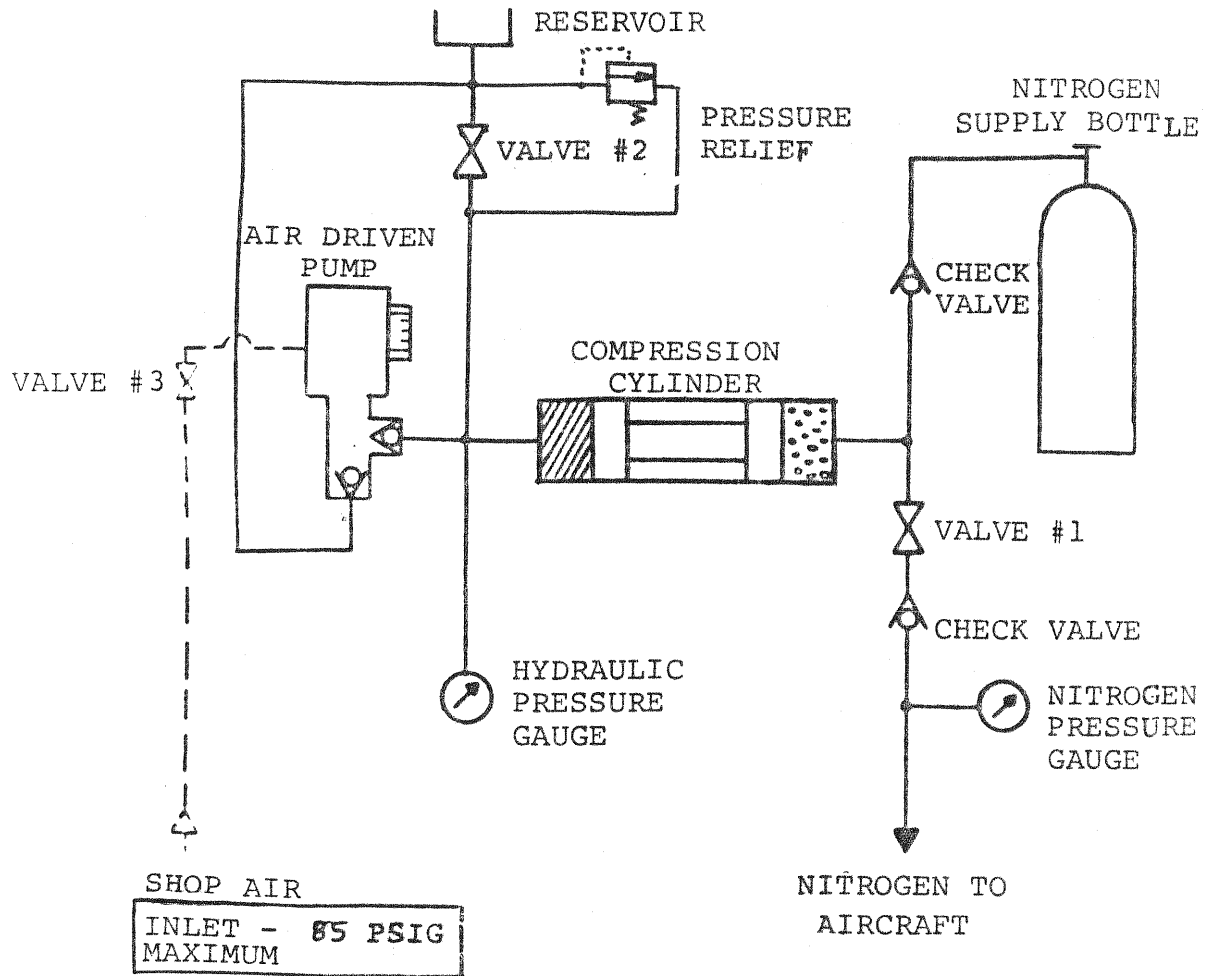
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PANEL LAYOUT



SCHEMATIC



1.0 DESCRIPTION

The Tronair Model 99-9003-0100 Pneumatic Nitrogen Charger provides the capability of boosting lower pressure nitrogen from the supply bottle to the required aircraft system pressure; up to 3000 PGIG maximum

This Nitrogen Charger utilizes a cylinder containing two interconnected pistons (see schematic). Both pistons are moved by hydraulic force obtained with an air operated hydraulic pump. One piston interfaces with the hydraulic system while the other interfaces with the nitrogen system and compresses/pumps the nitrogen into the aircraft. Various valves and gauges allow semi-automatic operation.

WARNINGS :

- 1) THIS UNIT SHALL NOT BE USED WITH OXYGEN. SEVERE PERSONAL INJURY COULD OCCUR.
- 2) DO NOT USE ON LOW PRESSURE AIRCRAFT COMPONENTS OR SYSTEMS REQUIRING NITROGEN SUCH AS TIRES, ETC. THIS IS AN UNREGULATED NITROGEN SOURCE EQUAL TO SUPPLY BOTTLE PRESSURE.

2.0 SPECIFICATIONS/FEATURES

- o Nitrogen output rating: 3000 PSIG Max.
(Do Not Exceed)
- o Shop air input: 10 SCFM @ 85 PSIG MAX.
- o Hydraulic fluid: MIL-H-5606
- o Hydraulic Pressure Gauge

--- Provided to monitor hydraulic fluid pressure.

- o Aircraft Nitrogen Pressure Gauge
 - Provided to monitor the nitrogen pressure being supplied to the aircraft. This pressure shall not exceed 3000 PSIG.
- o Aircraft Nitrogen Shut-Off Valve; Valve #1
 - Provided to prevent supply bottle bleed off when aircraft fill line is disconnected.
- o Hydraulic System Release Valve; Valve #2
 - Provided to release system hydraulic pressure during operation thereby allowing piston to move back to initial position.
- o Shop Air Supply Valve; Valve #3
 - This needle valve is located on the air pump and is provided to control pump operation via the shop air supplied.
- o 15 Foot Aircraft Fill Hose with #4, 37' JIC (Female 37' flared swivel) fitting at aircraft hook-up end.
- o Completely separated hydraulic and nitrogen chambers to prevent crossover or mixing of these two substances.
- o Internal Hydraulic System Relief Valve; limits hydraulic pressure to 3500 PSIG.

3.0 WARRANTY**Limited one (1) year warranty**

We warrant to the original consumer purchaser that each new product sold by Tronair will be free from manufacturing or material defects in normal services for a period of one year unless otherwise stated. Notice of claim must be given thirty (30) days from the date buyer becomes aware of such defects.*

OUR OBLIGATION UNDER THIS WARRANTY IS LIMITED TO EITHER THE REPAIR OR REPLACEMENT OF DEFECTIVE MATERIALS. UPON OUR REQUEST, CONSUMER PURCHASER SHALL PROMPTLY RETURN TO US THE MATERIALS CLAIMED TO BE DEFECTIVE AND PAY ALL COSTS IN CONNECTION WITH SUCH SHIPMENT. Contact our sales department for a determination. This warranty does not apply to defects caused by casualty, abuse, mis-use, or other unreasonable use (including faulty repairs by others and failure to provide reasonable and necessary maintenance) while in the possession of the customer purchaser.

Exclusions: The following items are not covered by this warranty:

1. Parts requiring replacement during normal and routine maintenance.
2. Normal wear and tear of parts.
3. Any component incorporated into our products which carries a separate warranty from the component's manufacturer. Those manufacturers will determine the extent of warranty coverage.

THERE ARE NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, AS TO THE QUALITY, MERCHANTABILITY, OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY MATERIALS SOLD OR ANY SERVICE PERFORMED EXCEPT AS SPECIFICALLY SET FORTH BY TRONAIR. WE SHALL NOT, IN ANY EVENT, BE LIABLE FOR INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY TYPE OR NATURE.

***NOTE**

THIS WARRANTY MAY BE NULLIFIED IF THE CUSTOMER MAKES ANY ATTEMPT TO REPAIR OR DISASSEMBLE A DEFECTIVE UNIT WITHOUT SPECIFIC PERMISSION FROM TRONAIR.

4.0 PREPARATION

- o Unpacking: This Nitrogen Charger has been thoroughly inspected and tested prior to packaging and shipment. After opening the shipping container and removing the Nitrogen Charger, inspect it thoroughly for shipping damage.
- o IN THE EVENT OF DAMAGE, NOTIFY THE TRANSPORTATION COMPANY AT ONCE FOR INSPECTION AND HANDLING OF CLAIM.
- o Preparation for use:

WARNING

EXERCISE GOOD JUDGEMENT AND PRACTICES, WORK CAUTIOUSLY. HIGH PRESSURE COMPRESSED GAS; 3000 PSIG.

- 4.1 Position Nitrogen Charger onto a secured nitrogen supply gas bottle.
- 4.2 Clean out nitrogen supply gas bottle valve outlet and install the nitrogen charger inlet brass fitting and hose.
- 4.3 Generally check unit and assure the tightness of all fittings, nuts and bolts. Install air driven pump shop air control valve, valve #3.
- 4.4 Remove shipping plug identified by red tag from hydraulic reservoir and install plastic vent.
- 4.5 Reservoir Service: Checking and/or filling the hydraulic reservoir requires first that the piston be in the "initial" position.

To assure this condition perform the following:

- Cap off Aircraft Fill Hose
- Open valve #1; Aircraft Nitrogen Shut-Off Valve
- Open valve #2; Hydraulic System Release Valve
- Slowly open the supply bottle valve and pressurize to 200 PSIG; read on Aircraft Nitrogen Pressure Gauge. Close supply bottle valve.

- This will move the piston to the "initial" position.
- Remove the plastic vent cap by unscrewing. The reservoir should have a 1/2 inch air gap over the fluid. If low, fill with MIL-H-5606 hydraulic fluid.
- Replace plastic vent cap.
- Slowly bleed off pressure in the aircraft fill hose. Remove cap.

4.6 Nitrogen Charger Purge

The Nitrogen Charger can be purged of air and moisture by opening valve #1 (Aircraft Nitrogen Shut-Off) and allowing nitrogen from the supply bottle to slowly run through the unit. Cap aircraft fill hose after purging.

WARNING

SECURE THE AIRCRAFT FILL HOSE PRIOR TO PURGING THE UNIT. THIS WILL PREVENT THE HOSE FROM "WHIPPING" ABOUT IF TOO MUCH NITROGEN IS ALLOWED TO FLOW THROUGH THE UNIT.

4.7 The Nitrogen Charger is now ready for operation.

5.0 CHARGING THE AIRCRAFT NITROGEN SYSTEMWARNINGS

THE FOLLOWING ARE MAXIMUM PRESSURE LIMITS AND MUST NOT BE EXCEEDED.

1. Shop air pressure; 85 PSIG.
2. Hydraulic pressure as indicated on the hydraulic pressure gauge; 3500 PSIG.
3. Nitrogen Pressure as indicated on the nitrogen pressure gauge; 3000 PSIG.

- 5.1 Connect Aircraft Fill Hose to aircraft
- 5.2 Initial valve positions:
 - Valve #1 Open (Aircraft Nitrogen Shut-Off)
 - Valve #2 Closed (Hydraulic System Release)
 - Valve #3 Closed (Shop Air Supply)
- 5.3 Slowly open supply gas bottle valve until fully open.
 - This will charge both Nitrogen Charger and aircraft nitrogen system to supply bottle pressure.
 - If supply pressure is lower than the aircraft nitrogen system the check valves in the Nitrogen Charger will prevent back flow from the aircraft.

- 5.4 Slowly, partially open valve #3 (Shop Air Supply)
- Pump will start operating
- 5.5 When the hydraulic pressure reaches 3000/3200 PSIG slowly open valve #2 (Hydraulic System Release).
- This allows charging piston to return to initial position.
 - Pump speed will increase, this a normal. No adjustment is required.
- 5.6 When the hydraulic pressure reaches zero, hold for 5 seconds then close valve #2 (Hydraulic System Release).
- 5.7 Repeat steps 5.5 - 5.6 until the required aircraft nitrogen pressure is achieved as indicated by the Aircraft Nitrogen Pressure Gauge. At this time, CLOSE valve #3 (Shop Air Supply).

6.0 DISCONNECTING NITROGEN CHARGER FROM AIRCRAFT

WARNING

WHEN THE AIRCRAFT FILL LINE IS PRESSURIZED OR WHEN NITROGEN IS FLOWING IT WILL "WHIP" ABOUT IF NOT SECURED.

Ref: Paragraphs 6.2 and 6.5

- 6.1 Close valve #1 (Aircraft Nitrogen Shut-Off)
- 6.2 Slowly loosen, bleed and disconnect the aircraft fill line from the aircraft.
- 6.3 Close the supply gas bottle valve.
- 6.4 Slowly open valve #2 (Hydraulic System Release)
- 6.5 Slowly open valve #1 (Aircraft Nitrogen Shut-Off) to bleed off remaining pressure in the system.

7.0 MAINTENANCE

7.1 The only maintenance required is to assure proper hydraulic oil level in the reservoir. Reference paragraph 4.5.

8.0 STORAGE

8.1 Store unit in a clean, dry area in an up-right attitude to prevent hydraulic oil spillage.

8.2 Cap off Aircraft Fill Hose.

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PARTS LIST

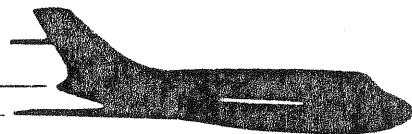
PRODUCT: MODEL 99-9003-0100
PNEUMATIC NITROGEN CHARGER

DATE:
FEBRUARY 24, 1983

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I	PANEL LAYOUT AND MAJOR COMPONENTS	2 of 4
II	NEEDLE VALVE ASSEMBLY; P/N HC-1081	3 of 4
III	COMPRESSION CYLINDER ASSEMBLY; P/N Z-1253	4 of 4

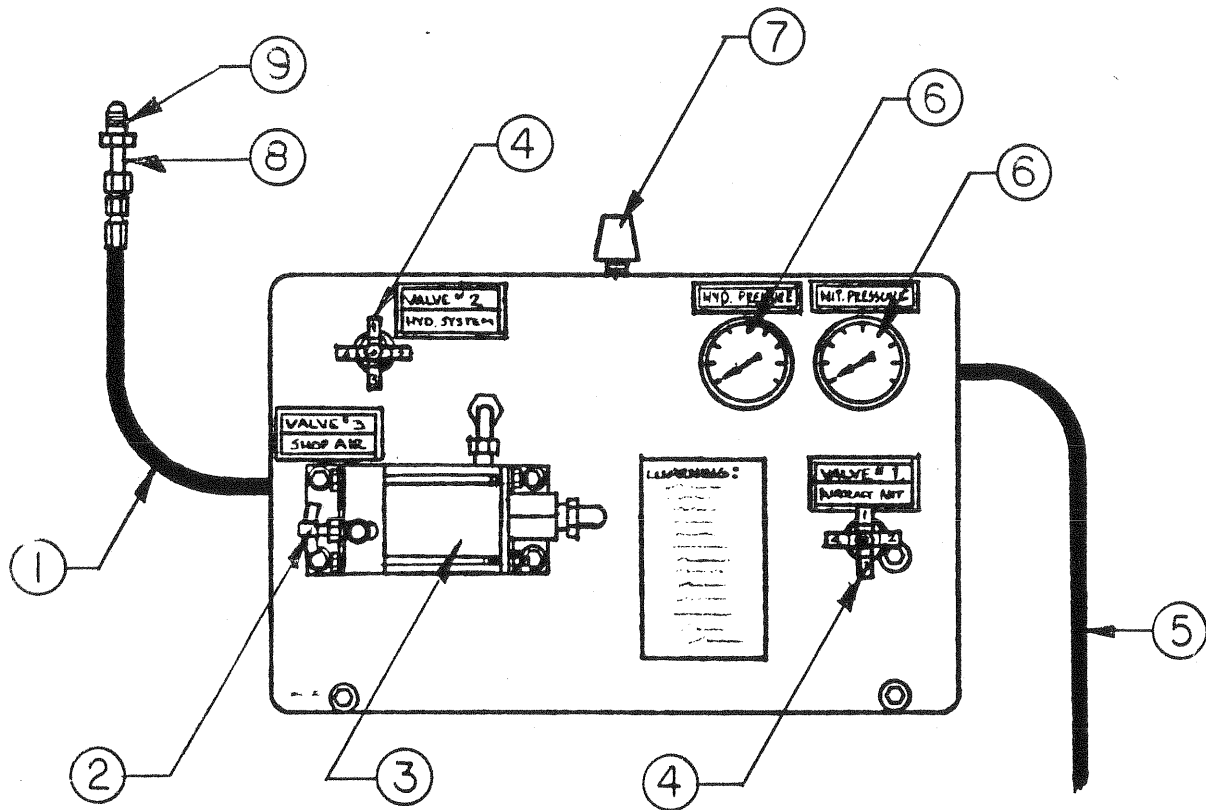
ORDERING: When ordering spare parts or replacement parts, please call out item no., part no., description, equipment model no., serial no. (if available) and parts list date.

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AIRCRAFT GROUND SUPPORT EQUIPMENT

SOUTH 1740 EBER RD / HOLLAND, OHIO 43528 / (419)-866-6301 / TWX 810-440-2839



ITEM	PART NUMBER	QTY	DESCRIPTION
1	HC-1069-1	1	HOSE ASSEMBLY
2	H-1173	1	NEEDLE VALVE
3	H-1174	1	AIR DRIVEN PUMP
4	HC-1081	2	NEEDLE VALVE (See Page 3 of 4 for parts break down)
5	HC-1069-2	1	HOSE ASSEMBLY; 15 Ft.
6	HC-1079	2	PRESSURE GAUGE (0-5000 PSI)
7	H-1045	1	VENT CAP
8	PC-1000	1	INLET NIPPLE; for Nitrogen
9	PC-1001	1	NUT
10	HC-1080*	2	CHECK VALVE
11	Z-1283*	1	COMPRESSION CYLINDER (See Page 4 of 4 for parts break down)
12	HC-1185*	1	PRESSURE RELIEF VALVE (Set @ 3500 PSIG)
13	H-1461*	2	GUAGE MOUNTING BRACKET

* Items not shown, located on panel back side.

Ref. Schematic page i.i.i. of operating manual.

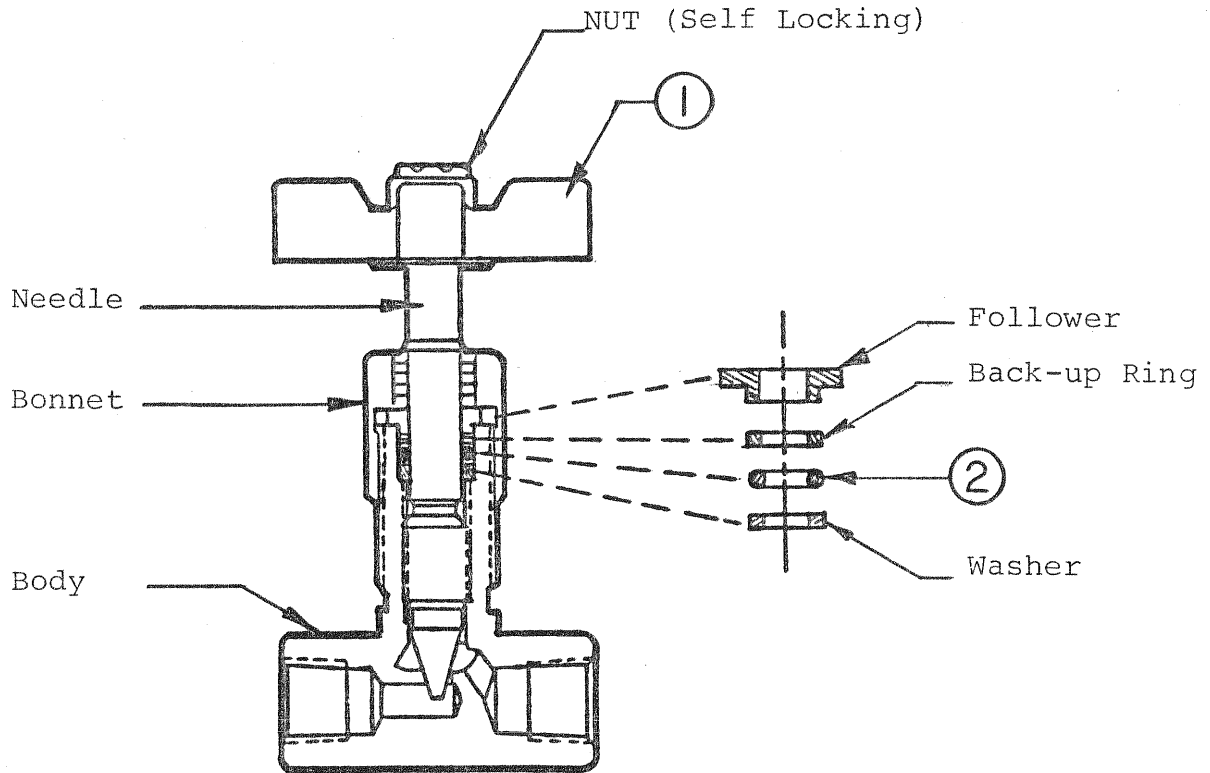
TRONAIR



AIRCRAFT GROUND SUPPORT EQUIPMENT

P/N: HC-1081

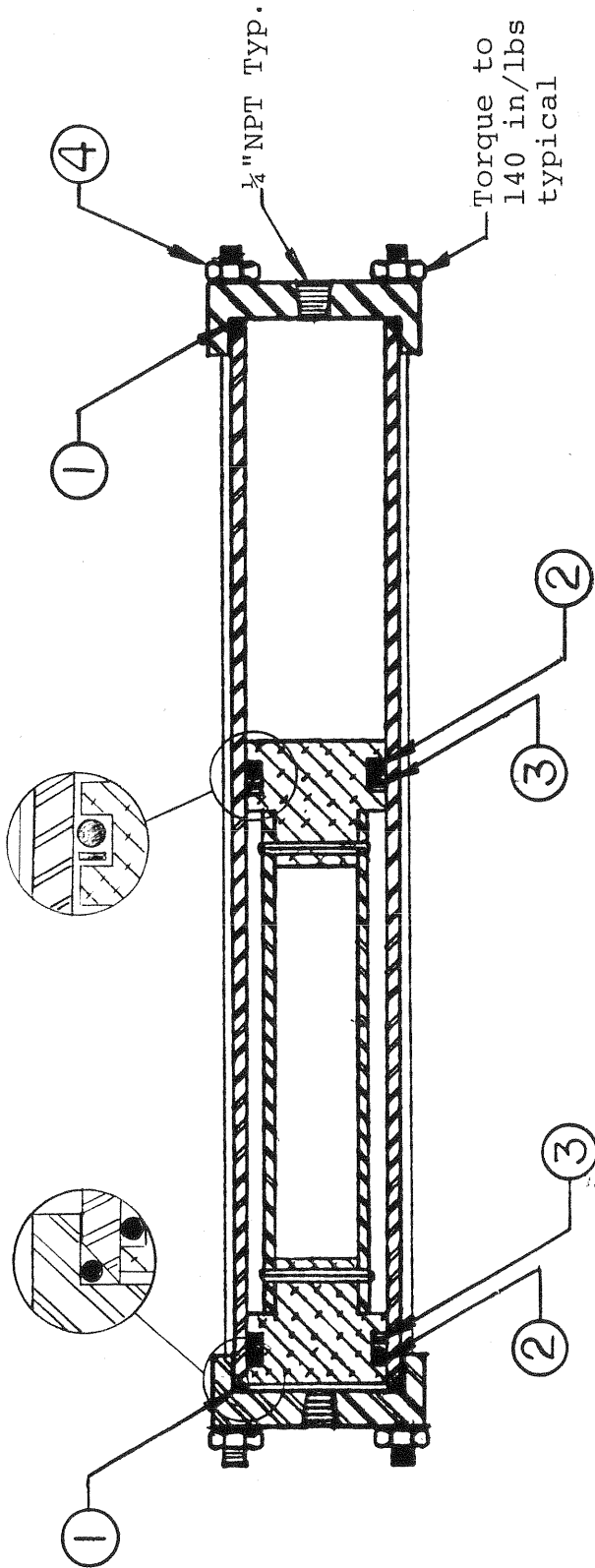
NEEDLE VALVE ASSEMBLY



VALVE REPLACEMENT PARTS

<u>ITEM</u>	<u>PART NUMBER</u>	<u>QTY.</u>	<u>DESCRIPTION</u>
1	HC-1082	1	VALVE HANDLE
2	2-011-N674-70	1	O-RING

COMPRESSION CYLINDER ASSEMBLY



ITEM	PART NUMBER	QTY	DESCRIPTION
1 *	2-227-N674-70	2	O-Ring
2 *	2-326-N674-70	2	O-Ring
3 *	MS-28774-326	2	Back-Up Ring
4	5/16-24	8	Elastic Stop Nut

* ITEMS #1, 2 & 3 CAN ONLY BE PURCHASED IN KIT FORM - SEAL KIT #K-1083 (INCLUDES ALL ITEMS & QUANTITIES LISTED ABOVE)

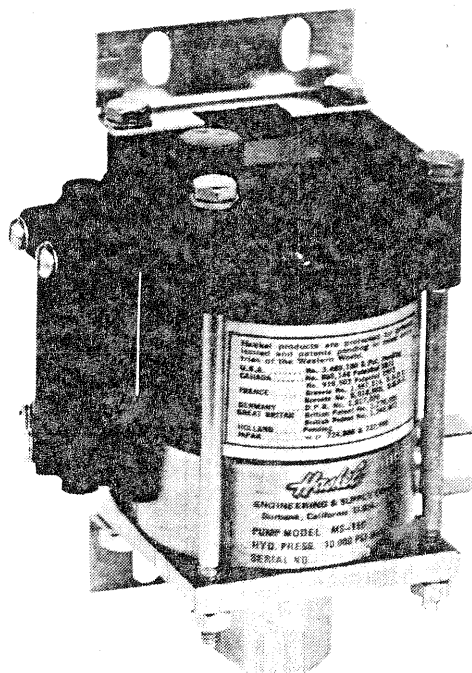
CAUTION:

When installing new piston "O" rings do not pass new "O" rings by cylinder center drain hole. Burrs left from machine operation will damage "O" Rings.

OPERATING and MAINTENANCE INSTRUCTIONS

for

MINIATURIZED AIR DRIVEN HYDRAULIC PUMPS



MODEL NUMBER _____ SERIAL NUMBER _____ DATE _____

WHEN ORDERING REPLACEMENT PARTS ALWAYS INCLUDE THE PUMP SERIAL NUMBER.

WARRANTY

Haskel manufactured products are warranted free of original defects in material and workmanship. This warranty does not include packings, seals, nor failures caused by lack of proper maintenance; incompatible fluids; foreign materials in the driving media; in the pumped media; or application of pressures beyond catalog ratings.

Products believed to be originally defective may be returned for repair and/or replacement to the distributor, authorized service representative, or to the factory. If upon inspection by the factory or authorized service representative, the problem is found to be originally defective material or workmanship, repair or replacement will be made at no charge for labor or materials, F.O.B. the point of repair or replacement. No consequential damages from use of this equipment are covered under the terms of this warranty.

Permission to return under warranty should be requested before shipment and include the following; the original purchase date, purchase

order number, serial number, model number, or other pertinent data to establish warranty claim, and to expedite the return or replacement to the owner.

If pump has been disassembled and reassembled in a facility other than Haskel, warranty is void if it has been improperly reassembled or substitute parts have been used in place of factory manufactured parts.

Any modification to any Haskel product which you have made or may make in the future has been and will be made at your sole risk and responsibility, and without Haskel's approval or consent. Haskel disclaims any and all liability, obligation, or responsibility for the modified product; and for any claims, demands, or causes of action for damage or for personal injuries resulting from the modification and/or use of such a modified Haskel product.

NOTE: Warranty period is ONE year from date of manufacture.

"Haskel" is the registered trademark of Haskel, Inc.



100 EAST GRAHAM

• BURBANK, CALIFORNIA 91502 • U.S.A.

INSTALLATION & OPERATION

General

Pump may be mounted in any position. However, models with separation chamber construction must be mounted vertically so that any leakage from the chamber vent port will not migrate into the air drive. Do not pipe vent port back to fluid source. If in doubt, consult factory or Haskel Distributor.

Air System

It is not necessary nor desirable to use an airline lubricator. Install an airline filter and regulator with a minimum of 1/4" NPT port size. Also, review air system upstream and eliminate any restrictions to provide 1/4" minimum inside diameter. If required by system, install a cycling shut off— speed control valve, 1/4" NPT port minimum at pump air inlet port.

Hydraulic System

CAUTION: Do not loosen hydraulic fittings on pump to facilitate makeup of piping connections. These fittings must be tight to avoid leakage or damage. **Do not reduce the size of the inlet piping!** Larger piping should be used with heavy fluids or if suction head is over three feet. The piping size can only be reduced if the inlet is supercharged. A suction filter may be desirable in the inlet line. 100 mesh is normally ample to protect the pump itself.

NOTE: See the current catalog for rating of various pump models.

Priming

Install a high pressure fitting or valve at pump outlet capable of use as an air vent or bleed at start up. Open air control valve slowly. Allow pump to cycle for approximately fifteen seconds, pumping fluid through vent or bleed. Close. If adequately primed, pump will begin to cycle slower due to increase in output resistance. If not, open vent and repeat.

Operation

Note that the pump model number includes its nominal area ratio as a suffix. The pump will cycle rapidly initially and as it approaches an output pressure equal to the ratio times the air drive pressure, it will slow down and finally "stall". Most air pressure regulators have 5 PSI or more differential between "flow" and "no flow" air pressures. Where it is necessary to pump an appreciable volume near the "stall" pressure, a high flow precision type air regulator should be used, or maximum pump pressure should be controlled by some other device such as a relief valve, pressure switch, or pressure operated shut-off valve, such as a Haskel air pilot switch.

MAINTENANCE

Air Drive Section

Air drive section of all liquid pumps are prelubricated at time of assembly at the factory with Haskel 28442 Lubricant and require no other means of lubrication. To lubricate the spool or air piston, or to inspect and repair or replace any parts, disassemble and assemble the pump parts in the sequence shown on assembly drawing. See assembly drawing for appropriate torques.

Important Note: The most common cause of air drive malfunction will be o-ring 568011 on the end of spool 17157. Inspect here first, replace if necessary and retest — before further disassembly of air drive. Spool 17157 is most easily removed by "blowing out" the spool and sleeve assembly with drive air. First remove the upper muffler cap and hold a cloth over the exhaust port.

Hydraulic Section

To inspect, clean and/or replace any parts, disassemble and assemble the pump parts as shown on individual assembly drawing.

TROUBLE SHOOTING GUIDE

SYMPTOM

A. Pump will not cycle or bypasses air.

CAUSE

1. Inadequate air supply.
2. Contaminated air system.

B. False cycle or leak out pilot exhaust (top center of cap).

1. Leakage of pilot system.

C. Pump cycles without pumping or does not dead-head.

1. Check valve(s) not seating.

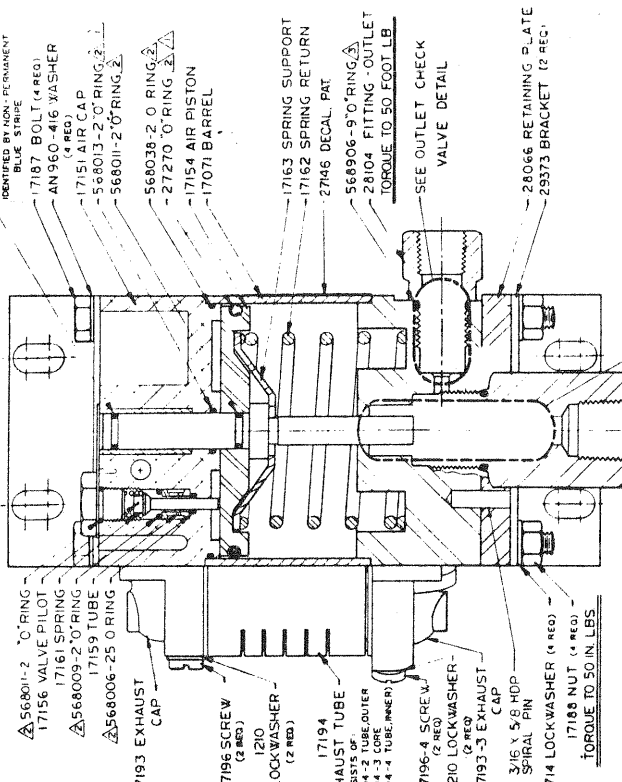
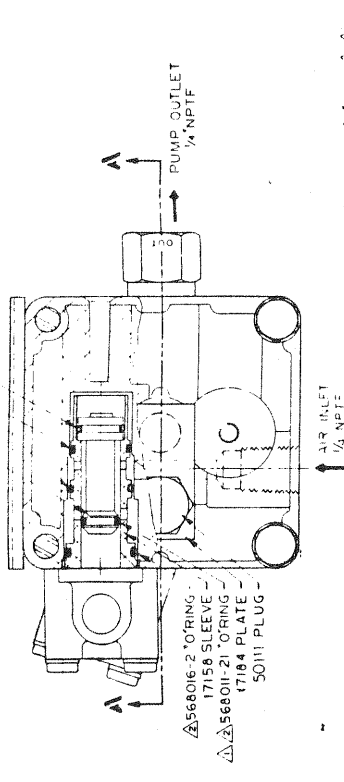
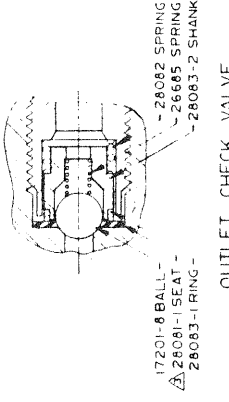
D. Pump fluid appears at muffler (or vent port on separation models).

1. High pressure seal leak.

REMEDY

1. See "Air System" under "Installation & Operation".
2. Remove sleeve and cycling spool (under upper cap of muffler). Clean, inspect, relubricate with light silicone grease P/N 28442 or equivalent.
1. Install new air section seal kit.
1. Inspect and clean check valve(s). First: Inlet check. Then outlet check.
1. Install new liquid section seal kit.

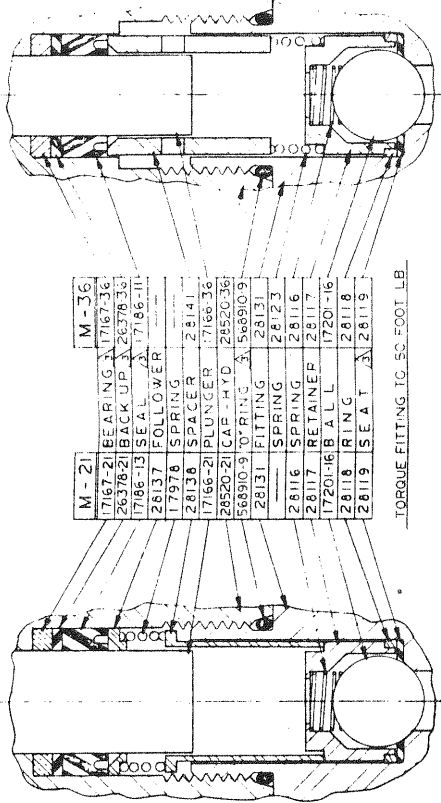
REV.	DESCRIPTION	DATE	BY	CHKD.
1	ISSUE FOR REVISED			
2	REVISIONS TO BE MADE IN ACCORDANCE WITH			
3	REVISIONS TO BE MADE IN ACCORDANCE WITH			
4	REVISIONS TO BE MADE IN ACCORDANCE WITH			
5	REVISIONS TO BE MADE IN ACCORDANCE WITH			
6	REVISIONS TO BE MADE IN ACCORDANCE WITH			
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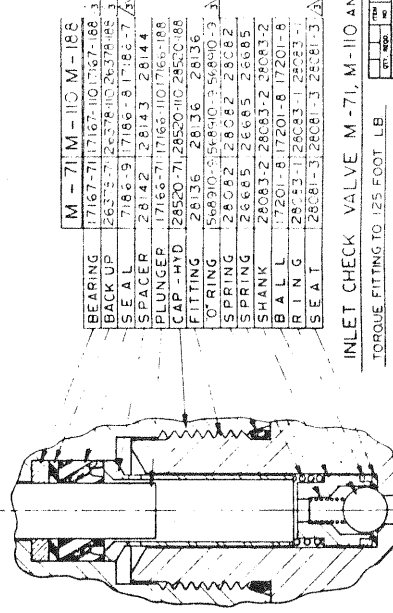
CROSS SECTION A-A

THESE PARTS ARE INCLUDED IN 17179-XX HYDRAULIC SECTION SEALS KIT
 THESE PARTS ARE INCLUDED IN 17178 AIR DRIVE SEALS KIT.
 APPLY VERY LIGHT COATING OF HASKEL LUBRICANT PN 28442 TO DYNAMIC SEALS IN AIR DRIVE SECTION.

NOTE



INLET CHECK VALVE M-21 AND M-36



INLET CHECK VALVE M-71, M-110 AND M-188

TORQUE FITTING TO 125 FOOT LB

ASSEMBLY DRAWING
 MODEL M PUMP
 E 81400
 2855C
 HASKEL CORPORATION & SUPPLY CO.
 17150 W. 10TH AVE. S.
 MINNETONKA, MINN. 55345



***** I. PRODUCT IDENTIFICATION *****

MOBIL AERO HFA

SUPPLIER: MOBIL OIL CORP. HEALTH EMERGENCY TELEPHONE: (212) 883-4411
CHEMICAL NAMES AND SYNONYMS: PET. HYDROCARBONS AND ADDITIVES TRANSPORT EMERGENCY TELEPHONE: (300) 424-9300 (CHEMTREC)
USE OR DESCRIPTION: AVIATION HYDRAULIC FLUID

***** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES *****

APPEARANCE: RED LIQUID ODDOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 78.8 AT 40 C, CS: 14.4
VISCOSITY AT 210 F, SUS: 45.0 AT 100 C, CS: 5.6
FLASH POINT F(C): 205(96) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): -75(-59)
BOILING POINT F(C): > 450(232)
RELATIVE DENSITY, 15/4 C: 0.876 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 20C: < 1.0

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

***** III. INGREDIENTS *****

Table with 4 columns: HAZARDOUS INGREDIENTS, WT PCT (APPROX), EXPOSURE LIMITS (MG/M3), SOURCES (PPM AND NOTES). Includes rows for CONVENT. REFINED MINERAL OILS (85) and ADDITIVES AND/OR OTHER INGREDIENTS (<15).

KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA
NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

***** IV. HEALTH HAZARD DATA *****

EFFECTS OF OVEREXPOSURE: ****NOTE: THIS PRODUCT CONTAINS CONVENTIONALLY REFINED MINERAL OILS WHICH MAY CONTAIN TRACE QUANTITIES OF POLYCYCLIC AROMATIC HYDROCARBONS (PCAH). UNDER CONDITIONS OF POOR PERSONAL HYGIENE AND PROLONGED, REPEATED CONTACTS, SOME PCAH HAVE BEEN SUSPECTED AS A CAUSE OF SKIN CANCER IN HUMANS. SLIGHT EYE IRRITATION. MODERATE SKIN IRRITATION.

***** V. EMERGENCY AND FIRST AID PROCEDURES *****

EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
INHALATION: NOT EXPECTED TO BE A PROBLEM.
INGESTION: DO NOT INDUCE VOMITING. ADMINISTER VEGETABLE OIL. GET MEDICAL ASSISTANCE. (NOTE TO PHYSICIAN: MATERIAL IF ASPIRATED INTO THE LUNGS MAY CAUSE CHEMICAL PNEUMONITIS. TREAT APPROPRIATELY)

*****Mobil******* VI. FIRE AND EXPLOSION HAZARD DATA *****
FLASH POINT F(C): 205(96) (ASTM D-92)
FLAMMABLE LIMITS. LEL: .6 UEL: 7.0
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES: FIREFIGHTERS MUST USE SELF-CONTAINED
BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

***** VII. REACTIVITY DATA *****
STABILITY (THERMAL, LIGHT, ETC.): STABLE
CONDITIONS TO AVOID: HEAT, SPARKS, FLAME AND BUILD UP OF STATIC
ELECTRICITY.
INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

***** VIII. SPILL OR LEAK PROCEDURE *****
ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE
AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE
REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING
INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE
NUMBER 800-424-3802.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT
TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF
AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH
CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT
CHARACTERISTICS AT TIME OF DISPOSAL.
WASTE MANAGEMENT: DISSOLVE WASTE IN A SOLVENT AND DISPOSE BY SUPERVISED
INCINERATION IN COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS.

***** IX. SPECIAL PROTECTION INFORMATION *****
EYE PROTECTION: NORMAL INDUSTRIAL EYE PROTECTION PRACTICES SHOULD BE
EMPLOYED.
SKIN PROTECTION: IF PROLONGED OR REPEATED SKIN CONTACT IS LIKELY, OIL
IMPERVIOUS GLOVES SHOULD BE WORN. GOOD PERSONAL HYGIENE PRACTICES
SHOULD ALWAYS BE FOLLOWED.
RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY
CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.
VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE
AND WITH ADEQUATE VENTILATION. USE IN WELL VENTILATED AREA AWAY
FROM ALL IGNITION SOURCES.

***** X. SPECIAL PRECAUTIONS *****
HANDLING: AVOID CONTACT WITH SKIN.
STORAGE: SEE APPENDIX FOR PRECAUTIONARY LABEL. L230

Mobil** XI. TOXICOLOGICAL DATA *****

---ACUTE---

ORAL TOXICITY (RATS): LD50: > 5 G/KG SLIGHTLY TOXIC(ESTIMATED)
---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.
DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG SLIGHTLY TOXIC(ESTIMATED)
---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.
INHALATION TOXICITY (RATS): NOT APPLICABLE ---HARMFUL CONCENTRATIONS OF
MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY
CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF
THIS PRODUCT.
EYE IRRITATION (RABBITS): MAY CAUSE SLIGHT IRRITATION. EYE IRRITATION
SCORES: 3.7 AT 24 HOURS, 3.0 AT 48 HOURS, 0.2 AT 72 HOURS---BASED
ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.
SKIN IRRITATION (RABBITS): MAY CAUSE MODERATE IRRITATION ON PROLONGED
OR REPEATED CONTACT. PRIMARY IRRITATION SCORE: 4.5/8---BASED ON
TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

***** XII. REGULATORY INFORMATION *****

TSCA INVENTORY STATUS: ALL COMPONENTS ARE REGISTERED.
EINECS INVENTORY STATUS: ALL COMPONENTS ARE REGISTERED.
THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME CAS NUMBER LIST CITATIONS
*** NO INGREDIENT CITATIONS ***

--- KEY TO LIST CITATIONS ---

- 1 = OSHA, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI,
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA RTK,
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = NJ SHH,
16 = FL RTK, 17 = PA RTK.

FOR MOBIL USE ONLY: (FILL NO: RM241150) MHC: 1* 1* NA 1* 2* PPEC:
US82-084 APPROVE REVISED: 11/22/82

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT
WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR
PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT
ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL
WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE
USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A
RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING
LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING
PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

*****Mobil******* APPENDIX *****

PRECAUTIONARY LABEL TEXT FOR PACKAGED PRODUCTS:

CONTAINS CONVENTIONALLY REFINED MINERAL OIL

CAUTION.

MAY CAUSE IRRITATION OR MORE SERIOUS SKIN
DISORDERS ON PROLONGED, REPEATED SKIN CONTACT.

AVOID CONTACT WITH SKIN.
CLOTHING WET WITH THIS PRODUCT SHOULD BE REMOVED.

FIRST AID: IN CASE OF SKIN CONTACT, THOROUGHLY WASH AREA
WITH SOAP AND WATER.
REMOVE CONTAMINATED CLOTHING AND SHOES.

WASH CONTAMINATED CLOTHING BEFORE REUSE.
DISCARD SHOES IF MATERIAL HAS PENETRATED TO INSIDE SURFACE.

FOR INDUSTRIAL USE ONLY.

KEEP OUT OF REACH OF CHILDREN.

NOT INTENDED OR SUITABLE FOR USE IN OR
AROUND A HOUSEHOLD OR DWELLING.

REFER TO PRODUCT MATERIAL SAFETY DATA BULLETIN
FOR FURTHER SAFETY AND HEALTH INFORMATION.

MOBIL OIL CORPORATION, NEW YORK, N.Y. L-230 (1/80)