

OPERATION AND SERVICE MANUAL

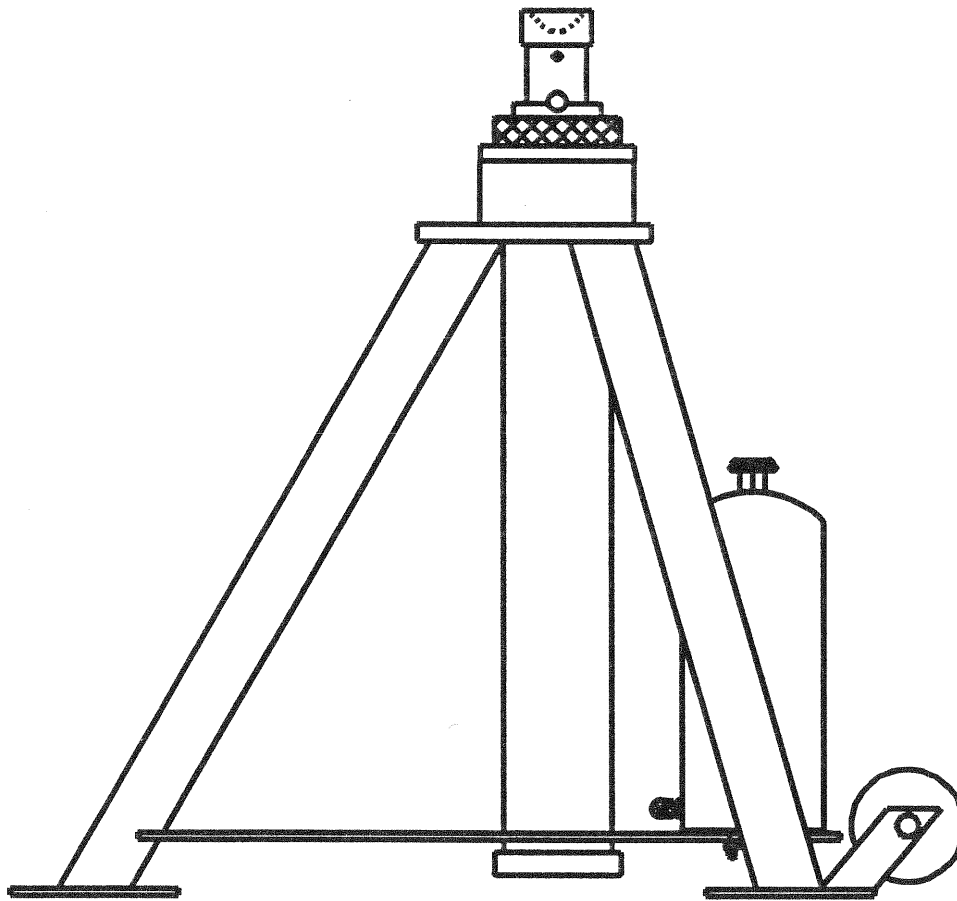
MODELS:

02-1032-0100 02-1248-0110 02-7805-X100
02-1036-0100 02-1248-8101 02-7807-0100
02-1040-0100 02-1248-8111 02-7810-0100
02-1248-0100 02-1256-0100

10 & 12 TON
SINGLE STAGE JACKS

October 1996

Rev: 12



Tronair

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**10 & 12 TON
SINGLE STAGE JACKS**

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10 & 12 TON SINGLE STAGE JACKS

1.0 DESCRIPTION

The Tronair Single Stage Jack incorporates the following quality features:

- Steel Construction
- Mechanical ram lock nut that prevents lowering of jack under load
- Quick action mechanical extension
- Single speed, manually operated pump with pressure relief
- Uses standard MIL-H-5606 hydraulic fluid

2.0 USAGE

The purpose of the following jacks are to lift the aircraft for maintenance. See specifications for capacity of each jack.

3.0 SPECIFICATIONS

Model	Capacity (lbs.)	Closed Height	Mechanical Extension	Hydraulic Extension	Fully Extended	Weight (lbs)
02-1032	20,000	30"	12"	16"	60"	175
02-1036	20,000	34"	14"	20"	70"	185
02-1040	20,000	38"	14"	24"	78"	220
02-1248	24,000	46"	14"	30"	92"	305
02-1256	24,000	56"	14"	32"	102"	290
02-7805	24,000	34"	14"	20"	70"	185
02-7807	20,000	30"	12"	16"	60"	175
02-7810	24,000	51"	14"	32"	97"	290

4.0 ASSEMBLY INSTRUCTIONS

4.1 GENERAL INFORMATION

This product should be assembled and/or repaired using good workmanship practices and proper tools. Bolts and elastic stopnuts should be tightened to a torque not to exceed industry standards for grade '5' bolts. 3/8-24 bolts should be tightened to 35 ft. lbs.

All replacement parts must be the same as or equal to the original parts supplied.

10 & 12 TON SINGLE STAGE JACKS

4.2 PRE-USE CHECKS

Refer to the Jack Illustrated Parts Breakdown to identify and assure that all parts are present.

- Generally check over unit to assure the tightness of all nuts, bolts and fittings.
- With rams completely collapsed, check hydraulic fluid level; 1.5 inches below vent. Replenish with MIL-H-5606 fluid as required.

5.0 OPERATING INSTRUCTIONS

The user should be familiar with the following statements prior to using the jack(s).

CAUTION:

1. Never put hands between aircraft and jack pad, as after aircraft has been lowered, struts may have hung up.
2. Never align jack under aircraft by pounding on jack legs. Dented legs may lead to jack collapse.
3. Always lower ram locking nut(s) after jack is under load. Be sure ram nut(s) is seated fully after jacking.
4. Always raise and lower jacks simultaneously, so that aircraft remains level.
5. Always use a tail or nose stand, as applicable, for additional stability.

JACK INSTRUCTIONS

TO RAISE AIRCRAFT:

1. Place jack on a hard level surface.
2. Raise mechanical extension as close to aircraft jack pad as possible.
3. Close pump release valve and operate pump.
4. Lower ram locknuts as aircraft is raised.

TO LOWER AIRCRAFT:

1. Lower all jacks simultaneously.
2. If ram locking nut(s) is tight, raise jack slightly to release nut(s).
3. Loosen pump release valve slightly to slowly lower aircraft. Raise locking nut(s), as jack ram(s) lower.

10 & 12 TON SINGLE STAGE JACKS

6.0 MAINTENANCE

GENERAL

- All maintenance and/or repair work should be done using good workmanship practices and proper tools.
- The work area should be clean and free of dirt.
- When o-rings and backup rings are removed, every effort should be made to avoid the contact of tools with the critical surfaces of parts. Surface deformities could cause degradation of seals and failure.
- It is good practice to replace both O-rings and backup rings once removed. Cut and damaged o-rings normally result in fluid leakage.
- If cylinder bore is found to be rusty, it may be honed to a maximum diameter of 3.257" and a surface finish of 16 micro inches. If pitting in the bore cannot be removed by this process, the jack cylinder must be replaced before the jack can be returned to service.
- At this time flush old hydraulic fluid and dirt from overall system and replenish with new, clean hydraulic fluid.

6.1 SERVICING JACK

TO DIS-ASSEMBLE JACK

1. Remove mounting plate (Item 7) by unscrewing three (3) socket head cap screws (Item 6).
2. Raise ram assembly (Item 9) to the point where it can be lifted from the jack cylinder.

TO RE-ASSEMBLE JACK

1. Re-assemble in reverse order of above.

NOTE: To minimize air entrapment under the ram, raise the oil level in the cylinder to chamfer of the cylinder prior to ram insertion.

6.2 REMOVING AND SERVICING PUMP

NOTE: If pump is found faulty, call the factory for replacement or replace seals as follows:

1. Review Illustrated parts breakdown - Pump.
2. Clamp suction (push on) hose and remove hose from pump.
3. Uncouple fitting of hydraulic hose from pump.
4. Remove pump from jack.

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6.2 REMOVING AND SERVICING PUMP (Continued)

5. Remove cotter pin (Item 32) from clevis pin.
6. Remove four (4) socket head cap screws.
7. Remove flanges.
8. Remove tube assembly (Item 4).
9. Replace o-rings and back-up ring. (See pump parts list for kits available).
10. Re-assemble in reverse order.

6.3 JACK FUNCTION LOAD TEST

NOTE: If function load testing is required:

1. Take all necessary precautions to prevent injury.
2. Always jack against a load and never against the jack itself.
3. Do not exceed a test load equal to the jack rated capacity plus 10%.

7.0 TROUBLE SHOOTING

TROUBLE	PROBABLE CAUSE	REMEDY
Ram will not rise or rises erratically	High pressure leaks (at joint, plugs or tubing)	Re-tighten or repair
	Leaky discharge check valve	Pump rapidly to dislodge or repair pump
	Leaky ram o-ring packing	Replace packing
	Leaky release valve	Tighten release valve
	Leaky pump o-ring packing	Repair pump
	Lack of oil	Refill reservoir check system for leaks
	Sticking inlet check valve	Pump rapidly to dislodge or repair pump
	Closed air vent	Open
	Air under ram	Bleed system
Jack will not lower	Ram lock nut not in right place	Rotate nut to top of ram
	Broken pump release valve	Repair pump
	Bent ram	Replace suspected ram assembly



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SINGLE STAGE JACKS**

REPLACEMENT PARTS - 12 TON

MODEL #

1	1	1	1	1	7	7				
2	2	2	2	2	8	8				
4	4	4	4	5	0	1				
8	8	8	8	6	5	0				
-	-	-	-	-	-	-				
0	8	0	8	0	X	0				
1	1	1	1	1	1	1				
0	0	1	1	0	0	0	Item	Part	Component	
0	1	0	1	0	0	0	#	Number	Description	Qty
*	*	*	*	*	*	*	1	HJ-557	Jack Pad	1
*	*	*	*	*	*	*	2	N-2004-06-S	Extra Long Male Elbow	1
*	*	*	*	*		*	3	N-2016-05-S	Run Swivel Nut Tee	1
*	*	*	*	*		*	4	N-2008-05-S	Cap	1
				*		*	5	N-2250-06	Expanding Pipe Adapter	1
*	*	*	*	*	*	*	6	G-1300-25200	¼ x 2" lg Roll Pin	1
					*		7	HJ-225-03	Extension Shaft	1
*	*	*	*	*		*		HJ-225-04		
*	*	*	*	*	*	*	8	G-1318-1033	⅝ x 3.3 lg Model "D" Pin	1
*	*	*	*	*	*	*	9	HJ-553	Ram Protection Ring	1
*	*	*	*	*	*	*	10	HJ-545	Ram Nut	1
*	*	*	*	*	*	*	11	G-1151-106205	5/16-18 x ⅝ lg S.H.C.S.	3
*	*	*	*	*	*	*	12	HJ-556	Mounting Plate	1
*	*	*	*	*	*	*	13	HJ-554	Guide Ring	1
					*		14	HJ-586-02	Ram Assembly	1
*	*							HJ-586-03		
				*		*		HJ-586-04		
		*	*					HJ-586-05		
*	*	*	*	*	*	*	16	TR-1505	Stop Jack	1
*	*	*	*	*	*	*	19	H-1009-01	Handle Assembly	1
*	*	*	*	*	*	*	20	N-2005-10-S	Male Elbow	1
				*		*	21	TF-1043-03*09.4	Hose Assembly	1
*	*	*	*		*			TF-1043-03*15.0		

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1	1	1	1	1	7	7				
2	2	2	2	2	8	8				
4	4	4	4	5	0	1				
8	8	8	8	6	5	0				
-	-	-	-	-	-	-				
0	8	0	8	0	X	0				
1	1	1	1	1	1	1				
0	0	1	1	0	0	0	Item	Part	Component	
0	1	0	1	0	0	0	#	Number	Description	Qty
*	*	*	*	*	*	*	23	G-1251-1070R	Regular Lockwasher (3/8)	2
*	*	*	*	*	*	*	24	G-1100-107010	3/8-16 x 1" lg H. H. Bolt	2
*	*	*	*	*	*	*	25	N-2410-01	90° Male Elbow	1
					*		26	N-2410-01	90° Male Elbow	1
*	*	*	*	*		*	27	N-2208-01-S	Male Branch Tee	1
*	*	*	*	*		*	28	N-2205-02-S	Hollow Hex Plug	1
*	*	*	*	*		*	29	N-2412-04	Straight Male Connector	1
*	*	*	*	*	*	*	30	TF-1047-01*09.0	Push-On Hose (1/4)	1
*	*	*	*	*	*	*	31	H-1045	Breather	1
*	*	*	*	*	*	*	33	G-1250-1050N	Flatwasher (1/4)	3
*	*	*	*	*	*	*	34	G-1205-1050	1/4-20 Elastic Stopnut	3
					*		36	G-1203-1095	1/2-20 Elastic Stopnut	2
					*		37	G-1100-109526	1/2-20 x 2 1/4 lg H. H. Bolt	2
*	*			*		*	38	H-1128-02	Spring	3
		*	*					H-1252		

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REPLACEMENT KITS - 12 TON

1	1	1	1	1	7	7	Kit Number	Component Description	Qty
2	2	2	2	2	8	8			
4	4	4	4	5	0	1			
8	8	8	8	6	5	0			
-	-	-	-	-	-	-			
0	8	0	8	0	X	0			
1	1	1	1	1	1	1			
0	0	1	1	0	0	0			
0	1	0	1	0	0	0			
					*		K-1322	Jack Weldment Replacement Kit; consists of: - Item 15 Jack Weldment w/labels	1
		*	*				K-2614		
*	*						K-1313		
				*			K-1314		
						*	K-2040		
*	*				*		K-1061-02	Reservoir Replacement Kit; consists of: - Item 26 90° Male Elbow - Item 30 Push-On Hose (¼) - Item 31 Breather - Item 32 Reservoir Weldment - Item 34 ¼-20 Elastic Stopnut - Item 33 ¼ Flatwasher	1
		*	*	*		*	K-1061-08		1
									3
									3
*	*	*	*	*	*	*	K-1050	Seal Replacement Kit; consists of: - Item 13 Guide Ring - Item 17 O-Ring (2-336) - Item 18 Backup (8-336)	1 1 1
*	*	*	*	*	*	*	K-1901-02	Pump Replacement Kit; consists of: - Item 20 Male Elbow - Item 22 Hand Pump - Item 24 ¾-16 x 1" lg H. H. Bolt - Item 23 ¾ Regular Lockwasher - Item 25 90° Male Elbow - Item 30 Push-on Hose (¼)	1 1 2 2 1 1

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10 & 12 TON SINGLE STAGE JACKS

1	1	1	1	1	7	7	Kit Number	Component Description	Qty
2	2	2	2	2	8	8			
4	4	4	4	5	0	1			
8	8	8	8	6	5	0			
-	-	-	-	-	-	-			
0	8	0	8	0	X	0			
1	1	1	1	1	1	1			
0	0	1	1	0	0	0			
0	1	0	1	0	0	0			
*	*	*	*	*	N / A	*	K-1062	Caster Replacement Kit; consists of: - Item 39 Swivel Caster - Item 40 5/8 Flatwasher - Item 41 5/8-18 Elastic Stopnut	1 1 1
N / A	N / A	N / A	N / A	N / A	*	N / A	K-1165	Wheel Replacement Kit; consists of: - Item 35 Wheel - Item 37 1/2-20 x 2 3/4 lg H. H. Bolt - Item 36 1/2-20 Elastic Stopnut	1 2 2



**10 & 12 TON
SINGLE STAGE JACKS**

REPLACEMENT PARTS - 10 TON

1 0 3 2	1 0 3 6	1 0 4 0	7 8 0 7	Item #	Part Number	Component Description	Qty
*	*	*		1	HJ-557	Jack Pad	1
			*	1	R-1276	Jack Pad	1
*	*	*	*	2	N-2004-06-S	Extra Long Male Elbow	1
		*		3	N-2016-05-S	Run Swivel Nut Tee	1
		*		4	N-2008-05-S	Cap	1
*	*	*	*	6	G-1300-25200	¼ x 2" lg Roll Pin	1
*			*	7	HJ-225-01	Extension Shaft	1
	*				HJ-225-03		
		*			HJ-225-04		
*	*	*	*	8	G-1318-1033	⅝ x 3.3 lg Model "D" Pin	1
*	*	*	*	9	HJ-553	Ram Protection Ring	1
*	*	*	*	10	HJ-545	Ram Nut	1
*	*	*	*	11	G-1151-106205	5/16-18 x ⅝ lg S.H.C.S.	3
*	*	*	*	12	HJ-556	Mounting Plate	1
*	*	*	*	13	HJ-554	Guide Ring	1
*			*	14	HJ-586-01	Ram Assembly	1
	*				HJ-586-02		
		*			HJ-586-03		
*	*	*	*	16	TR-1505	Stop Jack	1
*	*	*	*	19	H-1009-01	Handle Assembly	1
*	*	*	*	20	N-2005-10-S	Male Elbow	1
*	*	*	*	21	TF-1043-03*15.0	Hose Assembly	1
*	*	*	*	23	G-1251-1070R	Regular Lockwasher (⅜)	2
*	*	*	*	24	G-1100-107010	⅜-16 x 1" lg H. H. Bolt	2
*	*	*	*	25	N-2410-01	90° Male Elbow	1
*	*		*	26	N-2410-01	90° Male Elbow	1

10 & 12 TON SINGLE STAGE JACKS

1 0 3 2	1 0 3 6	1 0 4 0	7 8 0 7	Item #	Part Number	Component Description	Qty
		*		27	N-2208-01-S	Male Branch Tee	1
		*		28	N-2205-02-S	Hollow Hex Plug	1
		*		29	N-2412-04	Straight Male Connector	1
*	*	*	*	30	TF-1047-01*09.0	Push-On Hose (1/4)	1
*	*	*	*	31	H-1045	Breather	1
*	*	*	*	33	G-1250-1050N	Flatwasher (1/4)	3
*	*	*	*	34	G-1205-1050	1/4-20 Elastic Stopnut	3
*	*		*	36	G-1203-1095	1/2-20 Elastic Stopnut	2
*	*		*	37	G-1100-109526	1/2-20 x 21 3/4 lg H. H. Bolt	2
		*		38	H-1128-02	Spring	3

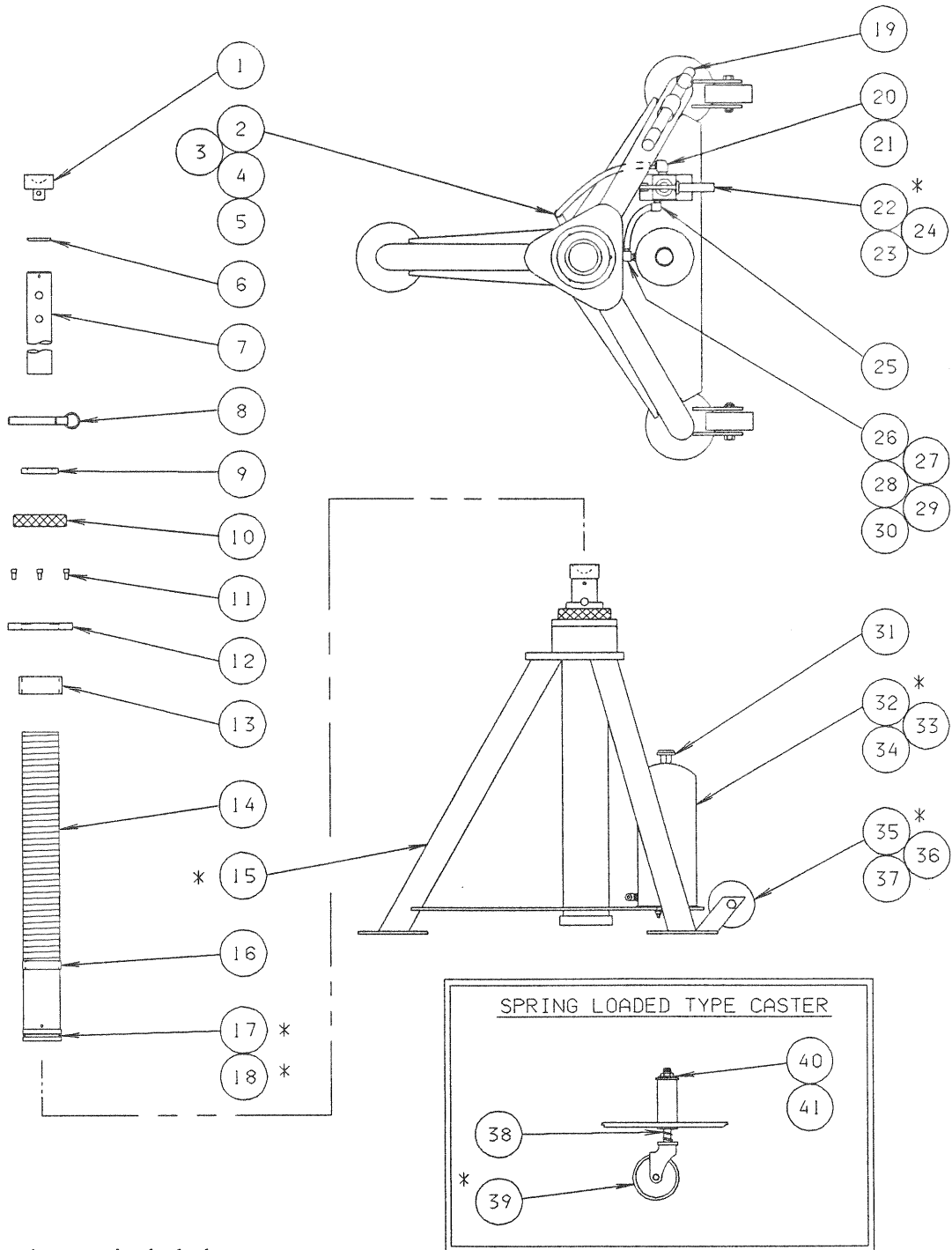
REPLACEMENT KITS - 10 TON

1 0 3 2	1 0 3 6	1 0 4 0	7 8 0 7	Kit Number	Component Description	Qty
*			*	K-1323	Jack Weldment Replacement Kit; consists of: - Item 15 Jack Weldment w/labels	1
	*			K-1322		
		*		K-1312		
*	*	*	*	K-1061-02	Reservoir Replacement Kit; consists of: - Item 26 90° Male Elbow - Item 30 Push-On Hose (1/4) - Item 31 Breather - Item 32 Reservoir Weldment - Item 34 1/4-20 Elastic Stopnut - Item 33 1/4 Flatwasher	1 1 1 1 3 3
*	*	*	*	K-1050	Seal Replacement Kit; consists of: - Item 13 Guide Ring - Item 17 O-Ring (2-336) - Item 18 Backup (8-336)	1 1 1

10 & 12 TON SINGLE STAGE JACKS

1 0 3 2	1 0 3 6	1 0 4 0	7 8 0 7	Kit Number	Component Description	Qty
*	*	*	*	K-1901-02	Pump Replacement Kit; consists of: - Item 20 Male Elbow - Item 22 Hand Pump - Item 24 3/8-16 x 1" lg H. H. Bolt - Item 23 3/8 Regular Lockwasher - Item 25 90° Male Elbow - Item 30 Push-on Hose (1/4)	1 1 2 2 1 1
N / A	N / A	* / A	N / A	K-1062	Caster Replacement Kit; consists of: - Item 39 Swivel Caster - Item 40 5/8 Flatwasher - Item 41 5/8-18 Elastic Stopnut	1 1 1
*	*	N / A	* / A	K-1165	Wheel Replacement Kit; consists of: - Item 35 Wheel - Item 37 1/2-20 x 2 3/4 lg H. H. Bolt - Item 36 1/2-20 Elastic Stopnut	1 2 2
*	N / A	N / A	N / A	K-2018	Jack Pad Kit (Cessna Citation III only) NOT SHOWN	1

10 & 12 TON SINGLE STAGE JACKS



* Item included
in Replacement Kit



Model: HC-1514-01

3000 PSI Hand Pump

**Parts List
With
Illustration**

02/1994 – Rev. 01

**** When ordering Replacement Parts/Kits, please specify Model, Color and Serial Number of your Unit.****

Tronair, Inc.

1740 Eber Road

Holland, Ohio 43528-9794

USA

Telephone: (419) 866-6301 • 800-426-6301

Fax: (419) 867-0634

Web Site: www.tronair.com E-mail: mail@tronair.com

Model: HC-1514-01
3000 PSI Hand Pump

Replacement Kits
(Reference Illustration on Page 3.)

PART NUMBER	DESCRIPTION	QTY
K-1907	Release Screw, Replacement Kit:	
- Item 2	Screw Retainer	1
- Item 3	Release Screw	1
K-1778	Piston/Cylinder, Replacement Kit:	
- Item 7	Valve Body	1
- Item 8	Tube	1
- Item 9	Snap Ring	1
- Item 10	Piston	1
K-1068	Linkage, Replacement Kit:	
- Item 13	Clevis Pin Assembly	1
- Item 14	Pivot	1
- Item 15	Pin Assembly	2
- Item 16	Strap	2
- Item 18	Pump Handle Bracket	1
K-1069	Internal Parts, Replacement Kit:	
- Item 4*	Release Ball	1
- Item 21	Outlet Check Spring	1
- Item 22	Outlet Check Ball	1
- Item 23	Inlet Check Ball	1
- Item 24	Inlet Check Spring	1
K-1906	Piston/Seal, Replacement Kit:	
- Item 10	Piston	1
- Item 30	Piston O-Ring	1
- Item 31	Backup Ring	1
K-1001	Seal, Replacement Kit:	
- Item 6	Release Screw O-Ring	1
- Item 26	Outlet Check O-Ring	1
- Item 27	Inlet Check O-Ring	1
- Item 28	Valve Body O-Ring	1
- Item 29	Tube Seal O-Ring	1
- Item 30	Piston Seal O-Ring	1
- Item 31	Backup Ring	1
- Item 32*	Guide Shoe O-Ring	2
- Item 34	Rod Wiper	1
- Item 35*	Piston Guide Shoe	1

NOTE: Entire pump assembly can be purchased as a kit. See hydraulic jack parts list.

* Although this item is listed in its particular kit, it is not used on HC-1514-02 pump. These items can be discarded.

**Model: HC-1514-01
3000 PSI Hand Pump**

Replacement Parts

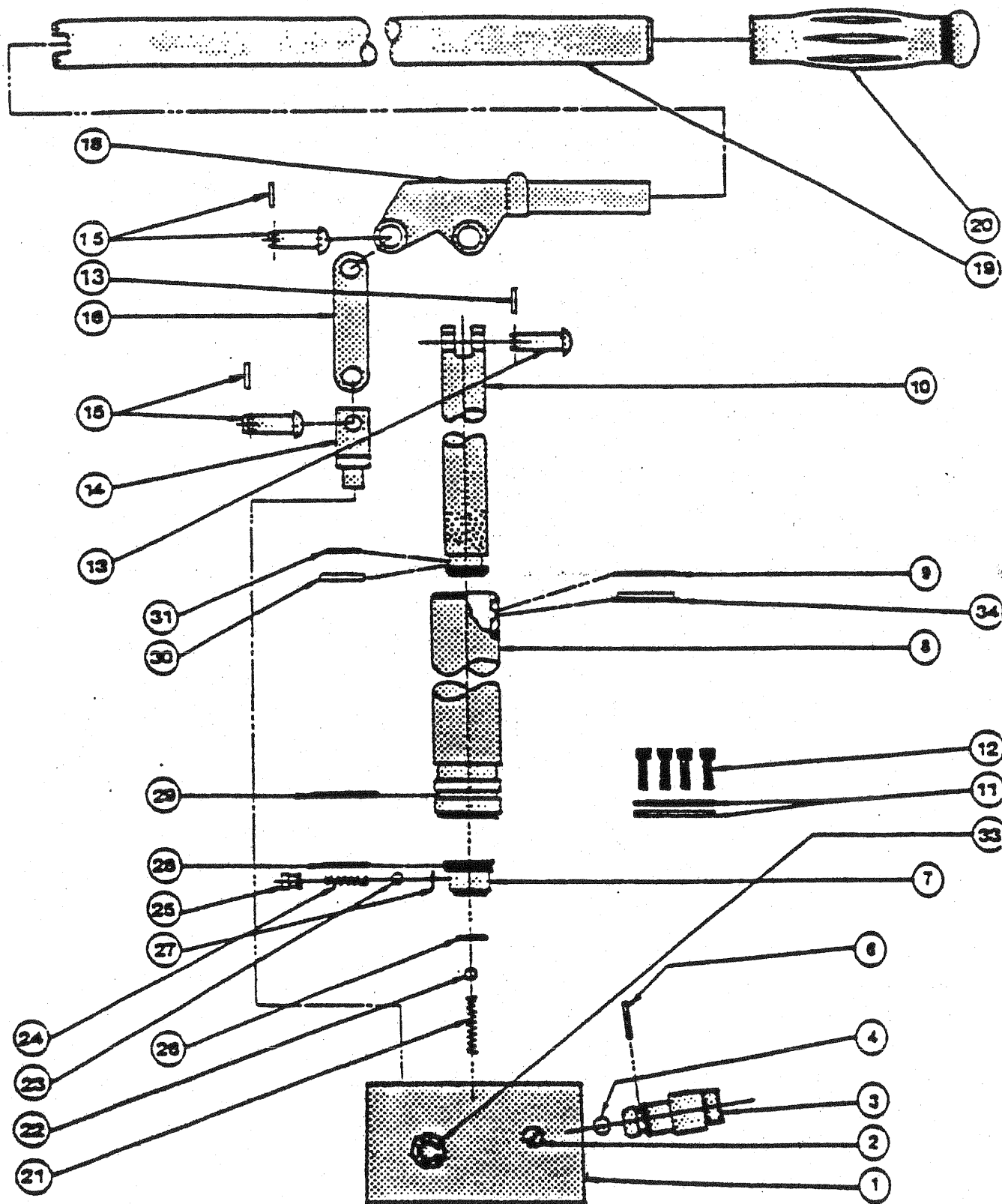
(Reference Illustration on following page.)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	501-000	Pump Body	1
11	506-000	Flange	4
12	518-000	Socket Head Cap Screw	4
19	511-240	Handle	1
20	529-000	Handle Grip	1
25	505-000	Plug	1
33	555-000	Bushing	1

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02/1994 - Rev. 01

Model: HC-1514-01
3000 PSI Hand Pump



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02/1994 - Rev. 01



490110-00 MOBIL AERO HFA
MATERIAL SAFETY DATA BULLETIN

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MOBIL AERO HFA
SUPPLIER: EXXONMOBIL OIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA 22037

24 - Hour Health and Safety Emergency (call collect): 609-737-4411

24 - Hour Transportation Emergency:
CHEMTREC: 800-424-9300 202-483-7616
LUBES AND FUELS: 281-834-3296

Product and Technical Information:
Lubricants and Specialties: 800-662-4525 800-443-9966
Fuels Products: 800-947-9147
MSDS Fax on Demand: 613-228-1467
MSDS Internet Website: <http://emmsds.ihssolutions.com/>

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: PET. HYDROCARBONS AND ADDITIVES

GLOBALLY REPORTABLE MSDS INGREDIENTS:

None.

OTHER INGREDIENTS:

Substance Name	Approx. Wt%
HYDROTREATED LIGHT NAPHTHENIC DISTILLATE (PETROLEUM) (64742-53-6)	85-95

See Section 8 for exposure limits (if applicable).

3. HAZARDS IDENTIFICATION

This product is considered hazardous according to regulatory guidelines
(See Section 15).

EMERGENCY OVERVIEW: Red Liquid. DOT ERG No. : NA
POTENTIAL HEALTH EFFECTS: Low viscosity material-if swallowed may

enter the lungs and cause lung damage. Prolonged repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.

For further health effects/toxicological data, see Section 11.

4. FIRST AID MEASURES

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.

SKIN CONTACT: Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. Discard shoes if material has penetrated to inside surfaces. High pressure accidental injection through the skin requires immediate medical attention for possible incision, irrigation and/or debridement.

INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance and call a physician. If breathing has stopped, use mouth to mouth resuscitation.

INGESTION: Get medical assistance and call a physician immediately. Do not induce vomiting or give anything by mouth to an unconscious person.

NOTE TO PHYSICIANS: Material if ingested may be aspirated into the lungs and can cause chemical pneumonitis. Treat appropriately.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical and water fog.

SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing.

Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

SPECIAL PROTECTIVE EQUIPMENT: For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

COMBUSTION PRODUCTS: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.

Flash Point C(F): > 105(221) (ASTM D-93).

Flammable Limits (approx.% vol.in air) - LEL: NE, UEL: NE

NFPA HAZARD ID: Health: 1, Flammability: 1, Reactivity: 0

6. ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES: 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) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: Eliminate all ignition sources. Ventilate area. Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up with spark-resistant

shovel and remove to appropriate waste disposal facility in accordance with current applicable laws and regulations.
ENVIRONMENTAL PRECAUTIONS: Prevent spills from entering storm sewers or drains and contact with soil.
PERSONAL PRECAUTIONS: See Section 8

7. HANDLING AND STORAGE

HANDLING: Avoid prolonged repeated skin contact. Avoid inhalation of vapors or mists. Wash thoroughly after handling. High pressure injection under the skin may occur due to the rupture of pressurized lines. Always seek medical attention.

STORAGE: Do not store in open or unlabelled containers. Store away from strong oxidizing agents and combustible materials. Store in a cool, dry, well ventilated area away from heat.

SPECIAL PRECAUTIONS: Prevent small spills and leakages to avoid slip hazard.

EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS: When mists/aerosols can occur, the following are recommended: 5 mg/m³(as oil mist)- ACGIH Threshold Limit Value (TLV), 10 mg/m³ (as oil mist)

- ACGIH Short Term Exposure Limit (STEL), 5 mg/m³ (as oil mist) - OSHA Permissible Exposure Limit (PEL)

VENTILATION: Use in well ventilated area. If mechanical ventilation is necessary, equipment should be explosion proof.

RESPIRATORY PROTECTION: Approved respiratory protective equipment must be used when vapor or mists concentrations exceed applicable standards. No special requirements under ordinary conditions of use and with adequate ventilation.

EYE PROTECTION: Normal industrial eye protection practices should be employed.

SKIN PROTECTION: If prolonged or repeated skin contact is likely, impervious gloves should be worn. Good personal hygiene practices should always be followed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.

APPEARANCE: Liquid

COLOR: Red

ODOR: Mild
ODOR THRESHOLD-ppm: NE
pH: NA
BOILING POINT C(F): NE
MELTING POINT C(F): NA
FLASH POINT C(F): > 105(221) (ASTM D-93)
FLAMMABILITY (solids): NE
AUTO FLAMMABILITY C(F): NE
EXPLOSIVE PROPERTIES: NA
OXIDIZING PROPERTIES: NA
VAPOR PRESSURE-mmHg 20 C: NE
VAPOR DENSITY: NE
EVAPORATION RATE: NE
RELATIVE DENSITY, 15/4 C: 0.85
SOLUBILITY IN WATER: Negligible
PARTITION COEFFICIENT: NE
VISCOSITY AT 40 C, cSt: 13.8
VISCOSITY AT 100 C, cSt: 5.3
POUR POINT C(F): -70(-94)
FREEZING POINT C(F): NE
VOC: < 80.00 (Wt. %); 5.669 lbs/gal
NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE

10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): Stable.
CONDITIONS TO AVOID: Heat, sparks, flame and build up of static electricity. Protect from direct sunlight.
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Product does not decompose at ambient temperatures.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL DATA

---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
DERMAL TOXICITY (RABBITS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
INHALATION TOXICITY (RATS): Not established
EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: greater than 6 but 15 or less). ---Based on testing of similar products and/or the components.
SKIN IRRITATION (RABBITS): Practically non-irritating. (Primary Irritation Index: greater than 0.5 but less than 3). ---Based on testing of similar products and/or the components.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Severely solvent refined and severely hydrotreated mineral base oils have been tested at Mobil Environmental and Health Sciences Laboratory by dermal application to rats 5 days/week for 90 days

at doses significantly higher than those expected during normal industrial exposure. Extensive evaluations including microscopic examination of internal organs and clinical chemistry of body fluids, showed no adverse effects.

---CHRONIC TOXICOLOGY (SUMMARY)---

The base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of severely treated oils showed no evidence of carcinogenic effects. These results are confirmed on a continuing basis using various screening methods such as the Mobil Modified Ames Test and IP-346.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS: This environmental assessment was conducted using information on the individual components as no test data was available for this specific formulation.

ECOTOXICITY: This material is not expected to be harmful to aquatic organisms.

MOBILITY: Dissolution of the higher molecular weight hydrocarbon components in water will be limited, but losses through sediment adsorption may be significant.

PERSISTENCE AND DEGRADABILITY: The majority of the components in this product are expected to be inherently biodegradable.

BIOACCUMULATIVE POTENTIAL: This product contains components with the potential to bio-accumulate.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at an appropriate government waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

RCRA INFORMATION: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity. The unused product is not formulated with substances covered by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

14. TRANSPORT INFORMATION

USA DOT: NOT REGULATED BY USA DOT.

RID/ADR: NOT REGULATED BY RID/ADR.

IMO: NOT REGULATED BY IMO.

IATA: NOT REGULATED BY IATA.

15. REGULATORY INFORMATION

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined to be hazardous.

EU Labeling: Product is not dangerous as defined by the European Union Dangerous Substances/Preparations Directives.

Symbol: Not applicable.

Risk Phrase(s): Not applicable.

Safety Phrase(s): S24-62.

Avoid contact with skin. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Contains: Low Viscosity Oil.

Governmental Inventory Status: All components comply with TSCA, EINECS/ELINCS, AICS, METI, and DSL.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III: This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) REPORTABLE HAZARD CATEGORIES:
CHRONIC ACUTE

This product contains no chemicals subject to the supplier notification requirements of SARA (313) toxic release program.

The following product ingredients are cited on the lists below:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
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TRIPHENYL PHOSPHATE (0.15%)	115-86-6	22
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--- REGULATORY LISTS SEARCHED ---

1=ACGIH ALL	6=IARC 1	11=TSCA 4	16=CA P65 CARC	21=LA RTK
2=ACGIH A1	7=IARC 2A	12=TSCA 5a2	17=CA P65 REPRO	22=MI 293
3=ACGIH A2	8=IARC 2B	13=TSCA 5e	18=CA RTK	23=MN RTK
4=NTP CARC	9=OSHA CARC	14=TSCA 6	19=FL RTK	24=NJ RTK
5=NTP SUS	10=OSHA Z	15=TSCA 12b	20=IL RTK	25=PA RTK
				26=RI RTK

Code key: CARC=Carcinogen; SUS=Suspected Carcinogen; REPRO=Reproductive

16. OTHER INFORMATION

USE: AVIATION HYDRAULIC FLUID

NOTE: PRODUCTS OF EXXON MOBIL CORPORATION AND ITS AFFILIATED COMPANIES ARE NOT FORMULATED TO CONTAIN PCBS.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for other applications. In any case, the following advice should be considered:

INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Precautionary Label Text:

CONTAINS LOW VISCOSITY OIL

CAUTION!

LOW VISCOSITY MATERIAL-IF SWALLOWED, MAY BE ASPIRATED AND CAN CAUSE SERIOUS OR FATAL LUNG DAMAGE. MAY CAUSE NOSE, THROAT AND LUNG IRRITATION, DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS.

PROLONGED, REPEATED SKIN CONTACT MAY CAUSE IRRITATION.

Keep away from heat, sparks, and flame. Avoid breathing vapor. Avoid contact with skin or clothing. Keep container closed. Use with adequate ventilation.

FIRST AID: If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician immediately. In case of contact, wash skin with soap and water. Remove contaminated clothing. Call a physician if irritation persists. Wash or dispose of contaminated clothing. If swallowed, seek immediate medical attention. Do not induce vomiting. Only induce vomiting at the instruction of a physician.

For industrial use only. Not intended or suitable for use in or around a household or dwelling.

Empty container may contain product residue, including flammable or explosive vapors. Do not cut, puncture, or weld on or near container. All label warnings and precautions must be observed until container has been thoroughly cleaned or destroyed.

Refer to product Material Safety Data Bulletin for further safety and health information.

For Internal Use Only: MHC: 1* 1* NE 1* 1*, MPPEC: C, TRN: 490110-00,
ELIS: 400275, CMCS97: 970584, REQ: MIAMI, SAFE USE: C
EHS Approval Date: 12AUG2003

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