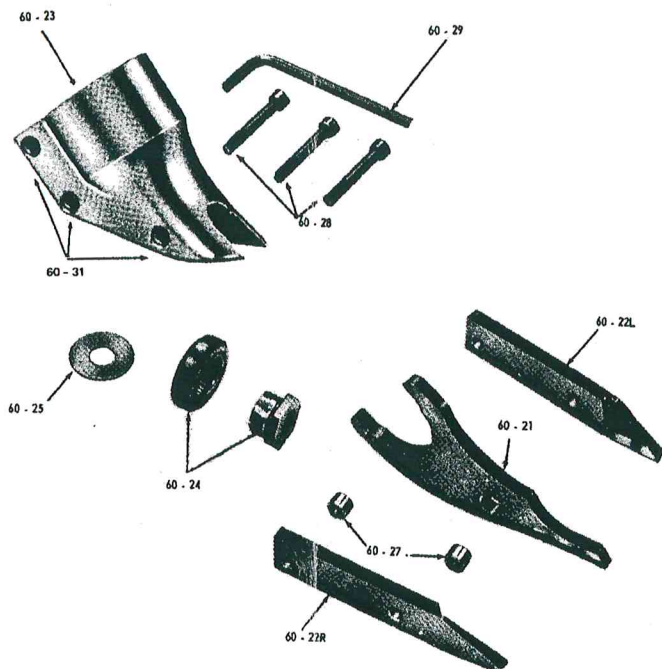




## INSTRUCTIONS FOR THE CARE OF THE KETT NO. 60-20 SHEAR HEAD



### ADJUSTMENT

To adjust the curl of waste material, the left side knife (60-22L) has elongated holes. Adjustment may be necessary after changing blades or material being cut. Loosen cap screws (60-28) and tap side knife (60-22L) either forward or backward so that curl of waste does not hit shear housing (60-23) or work material while cutting.

### DISASSEMBLY

To remove no. 60-20 shear head from power unit and dismantle:

1. Loosen both rear cap screws (60-28) three complete turns.
2. Remove shear head assembly (60-20) from motor by pulling head firmly forward. Slight twisting action may be required.
3. Remove three cap screws (60-28) completely from shear housing (60-23). Be careful not to lose rear spacer bushing (60-27) when removing rear cap screw.
4. Remove center blade (60-21) from shear housing (60-23) by tapping blade gently rearward. Be careful not to lose spacer bushing (60-27) from hole in center blade.
5. Side Knives (60-22L and 60-22R) will now drop out of shear housing.

### ASSEMBLY

To assemble no. 60-20 shear head and adapt to power unit:

1. Place the left side knife (60-22L) into position in the shear housing (60-23).
2. Insert center cap screw (60-28) through housing and blade just far enough to slip spacer bushing (60-27) over cap screw.
3. Place right side knife (60-22R) into position and push center cap screw through right side knife. Start cap screw into insert just enough to hold blades in place. **DO NOT TIGHTEN.**
4. Insert spacer bushing (60-27) into hole in center blade (60-21) and lubricate with a good grade of bearing grease.
5. Install center blade (60-21) into shear housing (60-23) by tapping blade gently forward using a drift to line up hole in center blade with forward holes in housing.
6. Insert and tighten forward cap screw (60-28) making sure spacer bushing (60-27) in center blade stays in position. Apply good grade of bearing grease to clevis in center blade. **WHEN SHEAR HEAD IS PROPERLY ASSEMBLED THE CENTER BLADE WILL PIVOT FREELY IN HEAD.**
7. Insert rear cap screw (60-28) into shear housing (60-23) but do not completely tighten.

To install shear head assembly (60-20) onto power unit:

1. Make sure rear cap screw and center cap screw (60-28) are loosened three complete turns.
2. Place shear head onto unit and tighten cap screws (60-28) snugly to lock head assembly in place. It may be necessary to gently tap the shear head assembly into place if it does not readily slip onto the power unit.

**WARNING: THE KETT TOOL CO. CANNOT ASSUME RESPONSIBILITY FOR DAMAGE TO OR MALFUNCTION OF A KETT SHEAR HEAD USED IN COMBINATION WITH ANY DRILL OR PARTS OTHER THAN THOSE REGULARLY SUPPLIED BY US. USE ONLY KETT REPLACEMENT BLADES EMBOSSED WITH PART NUMBERS 60-21, 60-22L OR 60-22R.**

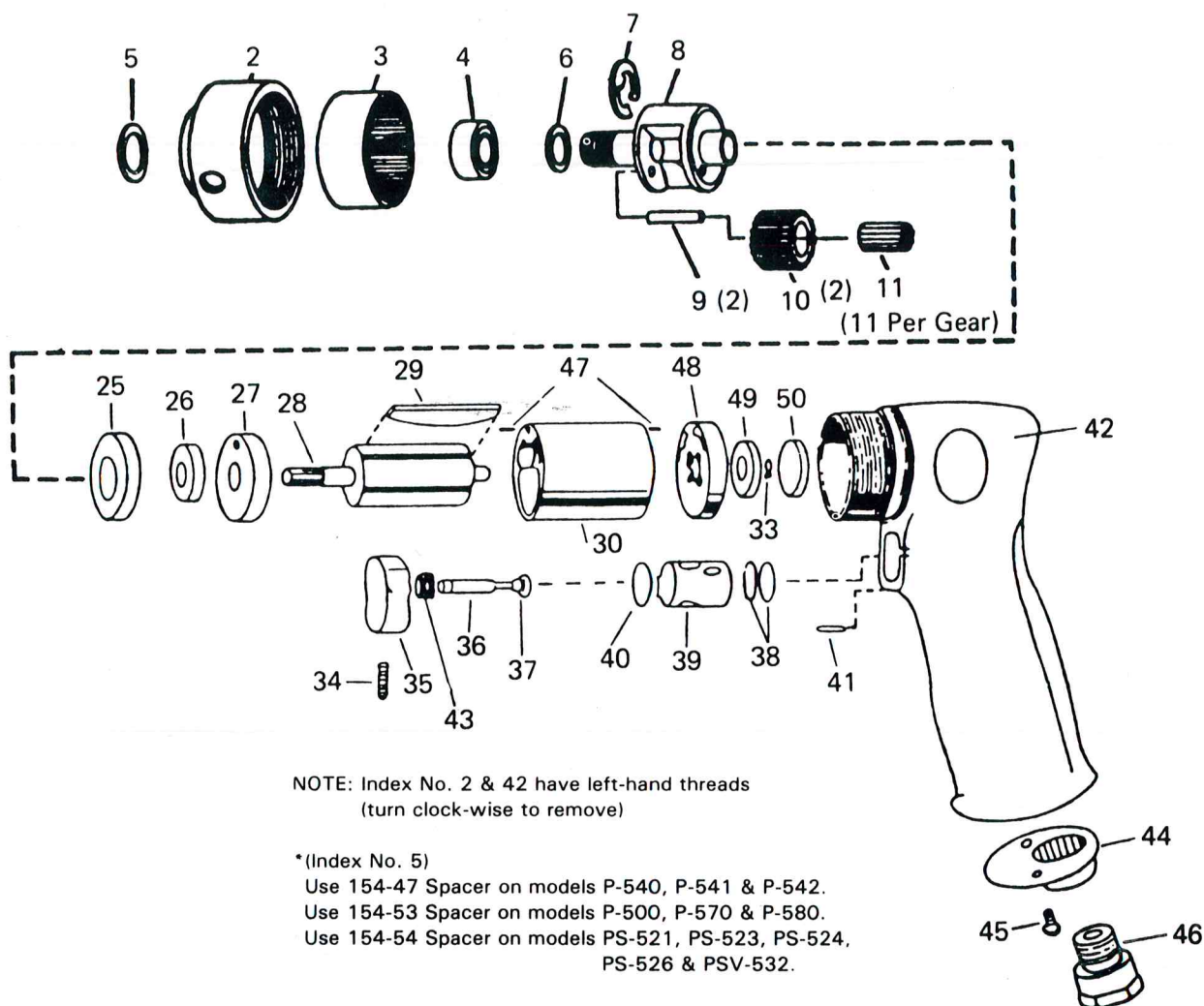
**NOTE: WHEN SHEAR HEAD IS PROPERLY ASSEMBLED  
THE CENTER BLADE WILL MOVE FREELY IN HEAD.**



## PARTS LIST FOR PNEUMATIC POWER UNITS

253-38 (SERIAL NUMBER 2001 TO 9600)

253-57 (SERIAL NUMBER 9601 - & HIGHER)



Index No.	Part No.	Description	Req'd Tool	Index No.	Part No.	Description	Req'd Tool
2	729799-R	Clamp Nut (253-57)	1	30	729708	Cylinder	1
	729799-440	Clamp Nut (253-38)		33	1012831	Ret. Ring	1
3	729798	Internal Gear	1	34	731928	Set Screw	1
4	49423-02	Ball Bearing (253-57)	1	35	731929	Trigger	1
	1008854	Ball Bearing (253-38)		36	731926	Valve Stem	1
5	154-*	Spacer	1	37	729591	O-Ring	1
6	729797-R	Fiber Washer (253-57)	1	38	729091	O-Ring	2
	729797	Fiber Washer (253-38)		39	731927	Valve Bushing	1
7	729208	Ret. Ring (used only on 253-38)	1	40	729263	O-Ring	1
8	729794-R	Planet Cage (253-57)	1	41	731930	Pin	1
	729794-440	Planet Cage (253-38)		42	731923-440	Motor Housing	1
9	729796-440	Planet Pin	2	43	731925	Valve Spring	1
10	729795	Planet Gear (incls. 729808 N. Rollers)	2	44	731922	Housing End Cap	1
11	729808	Needle Roller (see 729795 Planet Gear)	22	45	731921	Screw	2
25	1008212	Ball Bearing	1	46	731920	Air Inlet	1
26	1001532	Ball Bearing	1	47	729707	Dowel Pin	2
27	729793	Front Plate	1	48	729791	Rear Plate	1
28	729792	Rotor	1	49	729012	Ball Bearing	1
29	729709	Rotor Blade	4	50	729178	Bearing Seal	1

# **PNEUMATIC TOOLS**



**SAFETY, OPERATION  
AND MAINTENANCE**

## **IMPORTANT SAFETY INSTRUCTIONS**

*Read all instructions.*

*Save these instructions.*

### **For all pneumatic tools:**

When servicing, use only identical replacement parts.

## **SPECIFIC SAFETY RULES**

### **Keep Work Area Clean**

Cluttered areas and benches invite accidents. Keep work area well lit.

### **Keep Children Away**

All visitors should be kept away from work area.

### **Store Idle Tools**

When not in use, tools should be stored in dry, high or locked-up place out of reach of children.

### **Don't Force Tool**

It will do the job better and safer at the rate for which it was designed.

### **Use Right Tool**

Don't force a small tool to do the job of a heavy duty tool. Don't use tool for on purpose not intended, for example-don't use a circular saw for cutting tree limbs or logs.

### **Dress Properly**

Do not wear loose clothing or jewelry. They can be caught in moving parts. Rubber gloves and footwear are recommended when working out doors. Wear protective hair covering to contain long hair.

### **Use Safety Glasses**

Use safety equipment. Always wear eye protection.

### **Secure Work**

Use clamps or vise to hold work. It's safer than using your hand and it frees both hands to operate tool.

### **Don't Overreach.**

Keep proper footing and balance at all times.

### **Maintain Tools with Care**

Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing blades. Keep handles dry, clean, and be free from oil and grease.

### **Disconnect Tools**

When not in use; before servicing; when changing blades, etc.

### **Remove Adjusting keys and Wrenches**

Form a habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.

### **Avoid Accidental Starting**

Don't carry plugged-in tool with finger on switch. Be sure switch is OFF when plugging in. Use of any accessory with this power unit might increase the hazard. The tool should be used only for the purpose for which it is designed.

### **Stay Alert**

Watch what you are doing, use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol or medication.

### **Check Damaged Parts**

Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment if moving parts, binding or moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated elsewhere in this instruction manual. Have defective switches replaced by authorized service center. Do not use tool if switch does not turn it on or off.

**DO NOT OPERATE** power tools in explosive atmospheres such as in the presence of flammable liquids, gases, or dust.

Read all instruction.

Save these instructions.

## **Operating Instructions**

### **Panel Saws**

Be sure the work piece is securely held unless it will remain secure do to its own weight or bulk. Grasp the tool with both hands, one around the handle where the trigger switch is located, the other around the neck or sleeve which holds the cutting head in position. Before starting the motor place the shoe of the foot at the edge of the material to be cut.

Make certain the saw guard is set to depress to the desired depth. Be sure the shoe is flat or level and ready to make full contact with the surface to be cut. The scribed line to be cut should appear in the vee type gunsight on the saw guard.

Squeeze the trigger switch and set the blade in motion. Slowly push the saw forward until the blade makes contact and starts to cut. Gradually increase pressure, until blade is cutting at full capacity at a uniform speed without the feel of being forced or slowing to a stall. Keep the blade perpendicular to the cut and the feed at a constant speed. Do not jerk or suddenly thrust tool in cut and do not rock tool from side to side, so as to bind blade in the cut. When the blade starts cutting, it is more desirable to "crowd" rate of feed to attain efficient cutting speed, rather than to hold back and permit the blade to "dwell" in the cut.

Shut off the power the moment the saw has completed the cut through the sheet. If the cut is to be ended within the boundary of the sheet, bring the saw up to the end of the cut, hold firmly, shut off power and let it coast to a full stop. Then lift the saw from the cut. **NEVER BACK UP THE SAW IN THE CUT WITH THE POWER ON AND THE BLADE IN MOTION.** This is the most frequent cause of broken blades and can result in more serious damage to the tool.

For plunge cutting, that is, starting a cut within the perimeter or boundaries of a sheet, see the explicitly detailed instructions in the operation and service manual.

Where conditions permit, blade life can be extended and cutting efficiency improved through the use of a lubricant such as a grease stick, wax or tallow, or even cutting oil. It is recommended to practice cutting with the KETT Saw on scrap material until a knack of using the tool is acquired.

### **Power Shears**

Please read carefully all safety rules and operating instructions. The Model P-500 and P-2060 shears are recommended for CR sheet steel up to 18 gauge, the P-542 and P-2042 to 16 gauge, the P-540 and P-2040 to 14 gauge. Secure work piece. To start cut, place side knives of shear slightly on the top side of the edge of the work piece to steady the tool and ready it for the cut. Depress the trigger and guide shear into the work. Do not force it. Avoid double thicknesses of material which exceeds the recommended capacity. For cutting within the perimeter of the work piece drill a 1/2" diameter starting hole and follow instructions above. If resistance to tool develops or cutting becomes difficult, discontinue cutting and check the following: lubrication; thickness of material; sharpness of blades.

### **Scissor Shears**

Read safety rules carefully and observe all precautions. The KETT Scissor Shear is recommended for woven wood slat type shades; carpeting and carpet underlay or padding; Linoleum; vinyl and rubber flooring tile; soft, pliable plastic sheeting up to 1/8" thickness; and many other similar sheet like materials.

The shear head can be rotated a full 360 degrees on the power unit making it possible to position it to cut in close quarters. This feature also serves to set the oscillating blade to a preferred position either to the top or the bottom of the shear unit.

If resistance to tool develops or cutting becomes difficult, discontinue cutting and check the following: lubrication; thickness of material, sharpness of cutting blades. Blades can be sharpened.

The Model P-541 Scissor Shear is recommended for steel siding and other light gauge metals. Secure the work piece. To start the cut, place knives of shear slightly on the side of the work piece to steady the tool and ready it for the cut. Depress the trigger and guide shear into the work. Simply depress the trigger to adjust the speed to suit the material being cut. Do no force it.

### **Power Nibbler**

Please read carefully all safety rules and operating instructions.

The PN-1020 Nibbler is recommended for CR sheet steel up to 18 gauge and the PN-2020 up to 14 gauge. Secure the work piece. To start cut, place die opening of nibbler slightly onto the edge of the work piece to steady the tool and ready it for the cut. Depress the trigger switch on the drive motor and guide the nibbler into the work. Don't force it. Avoid double thickness of material which exceeds the 18 and 14 gauge recommended capacity. For cutting within the perimeter of the work piece, drill a 5/8" diameter starting hole and follow instructions above. If resistance to tool develops or cutting becomes difficult, discontinue cutting and check the following: lubrication; chip clogging; thickness of material; sharpness of

## **MAINTENANCE**

When servicing, use only identical replacement parts. Tool may be cleaned and lubricated by the user, but any other servicing, including the changing of carbon brushes, should be performed by the manufacturer or any authorized representative or service station.

### **Loss of power or erratic action**

If resistance to tool develops or cutting becomes difficult, discontinue cutting and check the following: lubrication; thickness of material; sharpness of cutting blades; air pressure.

Check for low air pressure or air line restriction, also reduced compressor output or excessive drain on air lines.

Dirt and gum deposits in tool may cause loss of power and may be removed by flushing tool with a rust inhibitive oil.

For maximum efficiency, 90 psi of clean, dry air should be supplied at the tool during operation. The use of one horsepower or larger compressor connected to an air tank of at least 40 gallons capacity is recommended.

Pipe and fittings between compressor and air hose outlets should be 1/2" pipe size (5/8" ID). Air hose should be at least 3/8" ID.

### **Lubrication**

Lubricate the air motor daily with a good grade of air motor oil. Use a continuous airline oiler with filter.

### **Right Angle Drill & Saw Heads**

Saw and drill head gears should be lubricated after 25 to 30 hours use. Inject a light cup grease into the grease opening covered by screw 181-2 in the bottom of the geared right angle transmission head. Specify 264-1 tube grease for lubrication.

Adherence to these maintenance instructions will greatly increase the life of your saw, so it will give you long and satisfactory service.

### **Shear Heads**

Once every three months, depending upon usage, remove the shear head from the power unit following the instructions given on the service sheet under the heading "Disassembly - To remove the shear head assembly from the drive motor". Put a few drops of heavy oil on the Eccentric Bearing Assembly, so that it saturates the needle bearing. Grease is even better if it can be forced or pressed into the needle bearing.

### **Nibbler Head**

When servicing use only identical replacement parts. Once every three months, depending upon usage, remove the nibbler head from the power unit by loosening the clamping screw (M133-16) and pull the head with a twisting action. Lubricate the bearing surface of the eccentric nut (41-24-1) with a good grade of bearing grease. Place nibbler head back onto motor. Tighten clamping screw snugly to lock head assembly in place.

### **All Angle Head**

To lubricate the 360 degree All Angle Head, first separate the two halves of the head by removing the socket head swivel stud out of the swivel stud nut. With the two halves separated, fill the drive spindle side until level with 264-1 Tube Grease.

Be sure to replace the copper shim between the two halves of the head. After the two halves are tightly clamped together, remove the excess grease. The tool is again ready for use.



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K13-413



## Megaflow® AW Hydraulic Oil

### Material Safety Data Sheet

#### 1. Product and Company Identification

**Product Name:** Megaflow® AW Hydraulic Oil

**MSDS Number:** 814637

**Synonyms/Other Means of Identification:** Megaflow® AW Hydraulic Oil 22  
Megaflow® AW Hydraulic Oil 32  
Megaflow® AW Hydraulic Oil 46  
Megaflow® AW Hydraulic Oil 68  
Megaflow® AW Hydraulic Oil 100  
Megaflow® AW Hydraulic Oil 150  
Megaflow® AW Hydraulic Oil 220  
Megaflow® AW Hydraulic Oil 320  
Megaflow® AW Ultra-Clean Hydraulic Oil 32  
Megaflow® AW Ultra-Clean Hydraulic Oil 46  
Megaflow® AW Ultra-Clean Hydraulic Oil 68  
Megaflow® AW Ultra-Clean Hydraulic Oil 100

**Intended Use:** Hydraulic Fluid

**Manufacturer:** ConocoPhillips Lubricants  
600 N. Dairy Ashford, 2W900  
Houston, Texas 77079-1175

**Emergency Health and Safety Number:** Chemtrec: 800-424-9300 (24 Hours)

**Customer Service:** U.S.: 1-800-822-6457 or International: +1-83-2486-3363

**Technical Information:** 1-877-445-9198

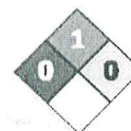
**MSDS Information:** Phone: 800-762-0942  
Email: MSDS@conocophillips.com  
www.conocophillips.com

#### 2. Hazards Identification

##### Emergency Overview

This material is not considered hazardous according to OSHA criteria.

##### NFPA



**Appearance:** Clear and bright  
**Physical Form:** Liquid  
**Odor:** Petroleum

##### Potential Health Effects

**Eye:** Contact may cause mild eye irritation including stinging, watering, and redness.

**Skin:** Contact may cause mild skin irritation including redness and a burning sensation. Repeated exposure may cause skin dryness or cracking. No harmful effects from skin absorption are expected.

**Inhalation (Breathing):** Not expected to be toxic.

**Ingestion (Swallowing):** No harmful effects expected from ingestion.

**Signs and Symptoms:** Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea.

**Pre-Existing Medical Conditions:** Conditions which may be aggravated by exposure include skin disorders.

See Section 11 for additional Toxicity Information.

### 3. Composition / Information on Ingredients

Component	CASRN	Concentration <sup>1</sup>
Lubricant Base Oil (Petroleum)	VARIOUS	>99
Additives	PROPRIETARY	<1

<sup>1</sup> All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

### 4. First Aid Measures

**Eye Contact:** If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

**Skin Contact:** Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention. 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. (see Note to Physician)

**Inhalation (Breathing):** First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Seek immediate medical attention.

**Ingestion (Swallowing):** First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

**Notes to Physician:** Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

### 5. Fire-Fighting Measures

#### NFPA 704 Hazard Class

Health: 0    Flammability: 1    Instability: 0    (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

**Unusual Fire & Explosion Hazards:** This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

**Extinguishing Media:** Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

**Fire Fighting Instructions:** For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

**Hazardous Combustion Products:** Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.  
See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

## 6. Accidental Release Measures

**Personal Precautions:** This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

**Environmental Precautions:** Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

**Methods for Containment and Clean-Up:** Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

## 7. Handling and Storage

**Precautions for safe handling:** Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Spills will produce extremely slippery surfaces. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

**Conditions for safe storage:** Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

## 8. Exposure Controls / Personal Protection

Component	US-ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup> as Oil Mist, if generated	TWA: 5 mg/m <sup>3</sup> as Oil Mist, if generated	---

**Note:** State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

**Engineering controls:** If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

**Eye/Face Protection:** The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

**Skin/Hand Protection:** The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile

**Respiratory Protection:** Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

## 9. Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Clear and bright
Physical Form:	Liquid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<1 mm Hg
Vapor Density (air=1):	>1
Initial Boiling Point/Range:	No data
Melting/Freezing Point:	<5°F / <-15°C
Pour Point:	<5°F / <-15°C
Solubility in Water:	Insoluble
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity (water=1):	0.87 @ 60°F (15.6°C)
Bulk Density:	7.3 lbs/gal
Viscosity:	4 - 24 cSt @ 100°C; 22 - 320 cSt @ 40°C
Evaporation Rate (nBuAc=1):	No data
Flash Point:	>302°F / >150°C
Test Method:	Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
Lower Explosive Limits (vol % in air):	No data
Upper Explosive Limits (vol % in air):	No data
Auto-ignition Temperature:	No data

## 10. Stability and Reactivity

**Stability:** Stable under normal ambient and anticipated conditions of use.

**Conditions to Avoid:** Extended exposure to high temperatures can cause decomposition. Avoid all possible sources of ignition.

**Materials to Avoid (Incompatible Materials):** Avoid contact with strong oxidizing agents and strong reducing agents.

**Hazardous Decomposition Products:** Not anticipated under normal conditions of use.

**Hazardous Polymerization:** Not known to occur.

## 11. Toxicological Information

**Chronic Toxicity:**

**Lubricant Base Oil (Petroleum)**

**Carcinogenicity:** The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Lubricant Base Oil (Petroleum)

Acute Toxicity:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Lubricant Base Oil (Petroleum)	> 5 g/kg	> 2 g/kg	> 5 mg/L

## 12. Ecological Information

**Ecotoxicity:** Experimental studies show that acute aquatic toxicity values are greater than 1000 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

**Mobility:** Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of base oil components in soil and sediment.

**Persistence and degradability:** The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

**Bioaccumulation Potential:** Log Kow values measured for the hydrocarbon components of this material range from 4 to over 6, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

## 13. Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle Used Oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

## 14. Transportation Information

U.S. Department of Transportation (DOT)

Shipping Description:

Note:

Not regulated

If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)

International Maritime Dangerous Goods (IMDG)

Shipping Description:

Note:

Not regulated

U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #:

Note:

Not regulated

U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 24.

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---
Packaging Instruction # after 12/31/2010:	---	---	---

## 15. Regulatory Information

**CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):**  
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

**CERCLA/SARA - Section 311/312 (Title III Hazard Categories)**

Acute Health:	No
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

**CERCLA/SARA - Section 313 and 40 CFR 372:**  
This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

**EPA (CERCLA) Reportable Quantity (in pounds):**  
This material does not contain any chemicals with CERCLA Reportable Quantities.

**California Proposition 65:**

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

**Canadian Regulations:**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class  
None

**National Chemical Inventories:**

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.

All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

## 16. Other Information

Date of Issue:

Status:

Previous Issue Date:

Revised Sections or Basis for Revision:

MSDS Number:

03-Aug-2010

FINAL

14-Nov-2008

Periodic review and update

814637

**Guide to Abbreviations:**

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

**Disclaimer of Expressed and Implied Warranties:**

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.