CE

POWER BEVELER

PB8 POWER BEVELER

OPERATING MANUAL

H&S TOOL
A CLIMAX COMPANY

P/N 100343
February 2018
Revision 1

CLIMAX Family of Brands | BORTECH | CALDER TESTERS | H&S TOOL

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At Climax Portable Machining and Welding Systems, we value your opinion.

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- Shipping address
- Telephone number
- Machine model
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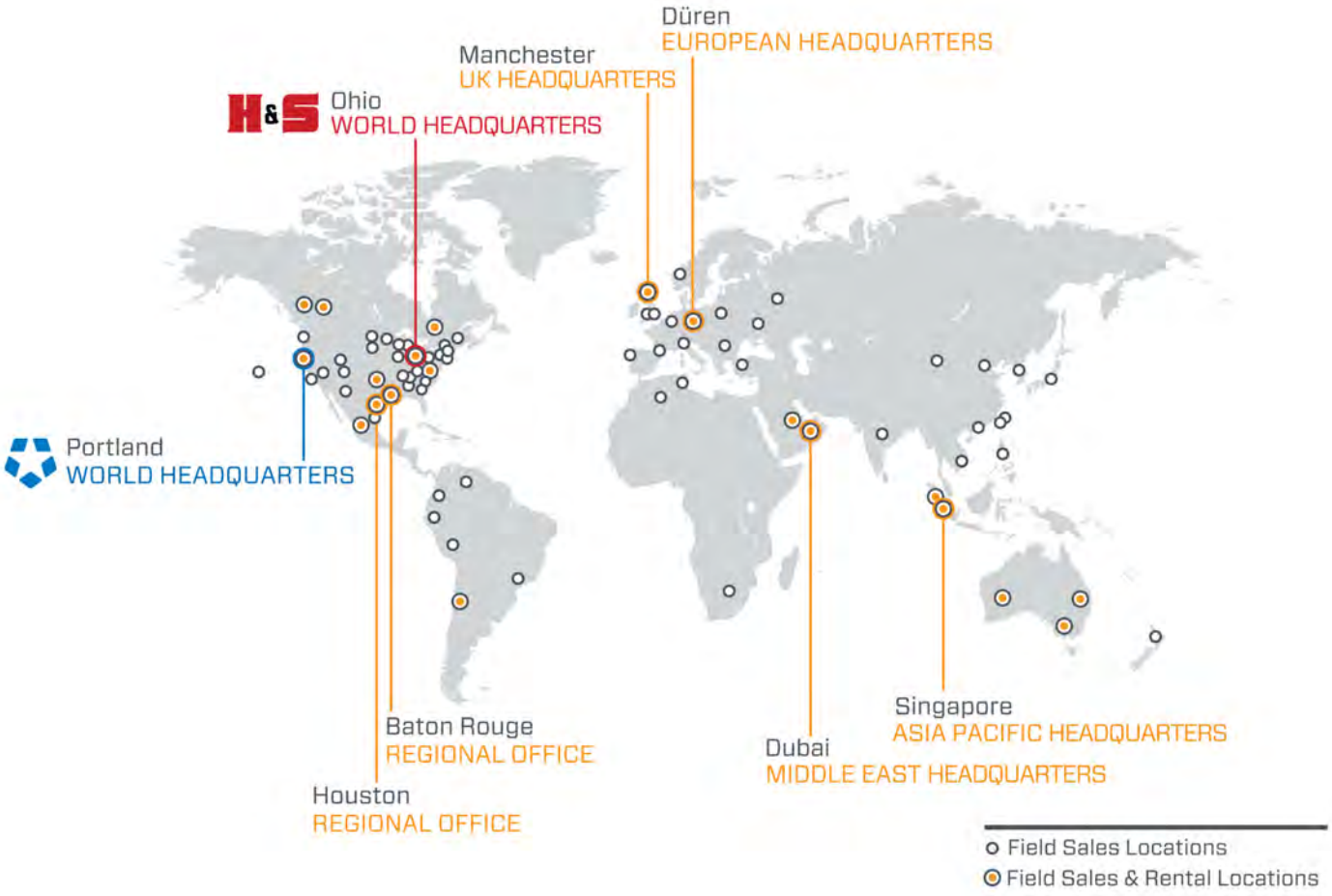

CE DOCUMENTATION

CE Certification is pending

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Climax Portable Machine Tools, Inc. (hereafter referred to as “Climax”) warrants that all new machines are free from defects in materials and workmanship. This warranty is available to the original purchaser for a period of one year after delivery. If the original purchaser finds any defect in materials or workmanship within the warranty period, the original purchaser should contact its factory representative and return the entire machine, shipping prepaid, to the factory. Climax will, at its option, either repair or replace the defective machine at no charge and will return the machine with shipping prepaid.

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About this manual

Climax provides the contents of this manual in good faith as a guideline to the operator. Climax cannot guarantee that the information contained in this manual is correct for applications other than the application described in this manual. Product specifications are subject to change without notice.

1 INTRODUCTION

IN THIS CHAPTER:

1.1 How to use this manual

This manual describes information necessary for the setup, operation, maintenance, storage, shipping, and decommissioning of the PB8 Power Beveler.

The first page of each chapter includes a summary of the chapter contents to help you locate specific information. The appendices contain supplemental product information to aid in setup, operation, and maintenance tasks.

Read this entire manual to familiarize yourself with the PB8 Power Beveler before attempting to set it up or operate it.

1.2 Safety alerts

Pay careful attention to the safety alerts printed throughout this manual. Safety alerts will call your attention to specific hazardous situations that may be encountered when operating this machine.

Examples of safety alerts used in this manual are defined here[1]:

DANGER

indicates a hazardous situation which, if not avoided, *WILL* result in death or severe injury.

WARNING

indicates a hazardous situation which, if not avoided, *COULD* result in death or severe injury.

CAUTION

indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

indicates a hazardous situation which, if not avoided, could result in property damage, equipment failure, or undesired work results

1. For more information on safety alerts, refer to *ANSI/NEMA Z535.6-2011, Product safety Information in Product Manuals, Instructions, and Other Collateral Materials*.

1.3 GENERAL SAFETY PRECAUTIONS

H&S leads the way in promoting the safe use of portable machine tools. Safety is a joint effort. You, the end user, must do your part by being aware of your work environment and closely following the operating procedures and safety precautions contained in this manual, as well as your employer's safety guidelines.

Observe the following safety precautions when operating or working around the machine.

Training – Before operating this or any machine tool, you should receive instruction from a qualified trainer. Contact H&S for machine-specific training information.

Risk assessment – Working with and around this machine poses risks to your safety. You, the end user, are responsible for conducting a risk assessment of each job site before setting up and operating this machine.

Intended use – Use this machine in accordance with the instructions and precautions in this manual. Do not use this machine for any purpose other than its intended use as described in this manual.

Personal protective equipment – Always wear appropriate personal protective gear when operating this or any other machine tool. Flame-resistant clothing with long sleeves and legs is recommended when operating the machine. Hot chips from the workpiece may burn or cut bare skin.

Work area – Keep the work area around the machine clear of clutter. Restrain cords and hoses connected to the machine. Keep other cords and hoses away from the work area.

Lifting – Many H&S machine components are very heavy. Whenever possible, lift the machine or its components using proper hoisting equipment and rigging. Always use designated lifting points on the machine. Follow lifting instructions in the setup procedures of this manual.

Lock-out/tag-out – Lock-out and tag-out the machine before performing maintenance.

Moving parts – H&S machines have numerous exposed moving parts and interfaces that can cause severe impact, pinching, cutting, and other injuries. Except for stationary operating controls, avoid contact with moving parts by hands or tools during machine operation. Remove gloves and secure hair, clothing, jewelry, and pocket items to prevent them from becoming entangled in moving parts.

Sharp edges – Cutting tools and workpieces have sharp edges that can easily cut skin. Wear protective gloves and exercise caution when handling a cutting tool or workpiece.

Hot surfaces – During operation, motors, pumps, HPUs, and cutting tools can generate enough heat to cause severe burns. Pay attention to hot surface labels, and avoid contact with bare skin until the machine has cooled.

1.4 MACHINE-SPECIFIC SAFETY PRECAUTIONS

Eye hazard – This machine produces metal chips during operation. Always wear eye protection when operating the machine.

Hazardous environments – Do not operate the machine in environments where potentially explosive materials, toxic chemicals, or radiation may be present.

Sound level – This machine produces potentially harmful sound levels. Hearing protection is required when operating this machine or working around it. During testing, the machine produced the sound levels[1] listed in Table 1-1.

TABLE 1-1. SOUND LEVELS

	Pneumatic Motor
Average sound pressure	90.6 dBA
Operator sound pressure	91.5 dBA
Bystander sound pressure	89.4 dBA
	Electric Motor
Average sound pressure	85 dBA
Operator sound pressure	85 dBA
Bystander sound pressure	85 dBA

1. Machine sound testing was conducted in accordance with European Harmonized Standards EN ISO 3744:2010 and EN 11201:2010.

1.5 RISK ASSESSMENT AND HAZARD MITIGATION

Machine Tools are specifically designed to perform precise material-removal operations.

Stationary Machine Tools include lathes and milling machines and are typically found in a machine shop. They are mounted in a fixed location during operation and are considered to be a complete, self-contained machine. Stationary Machine Tools achieve the rigidity needed to accomplish material-removal operations from the structure that is an integral part of the machine tool.

In contrast, Portable Machine Tools are designed for on-site machining applications. They typically attach directly to the workpiece itself, or to an adjacent structure, and achieve their rigidity from the structure to which it is attached. The design intent is that the Portable Machine Tool and the structure to which it is attached become one complete machine during the material-removal process.

To achieve the intended results and to promote safety, the operator must understand and follow the design intent, set-up, and operation practices that are unique to Portable Machine Tools valve testers.

The operator must perform an overall review and on-site risk assessment of the intended application. Due to the unique nature of portable machining applications hydrostatic testing, identifying one or more hazards that must be addressed is typical.

When performing the on-site risk assessment, it is important to consider the Portable Machine Tool valve tester and the workpiece as a whole.

1.6 RISK ASSESSMENT CHECKLIST

The following checklist is not intended to be an all inclusive list of things to watch out for when setting up and operating this Portable Machine Tool.

However, these checklists are typical of the types of risks the assembler and operator should consider. Use these checklists as part of your risk assessment:

TABLE 1-2. RISK ASSESSMENT CHECKLIST BEFORE SET-UP

	Before set-up
☐	I took note of all the warning labels on the machine.
☐	I removed or mitigated all identified risks (such as tripping, cutting, crushing, entanglement, shearing, or falling objects).
☐	I considered the need for personnel safety guarding and installed any necessary guards.
☐	I read the machine setup instructions (Section 3.2) and took inventory of all the items required but not supplied (Section 2.5).
☐	I considered how this machine operates and identified the best placement for the controls, cabling, and the operator.
☐	I evaluated and mitigated any other potential risks specific to my work area.

TABLE 1-3. RISK ASSESSMENT CHECKLIST AFTER SET-UP

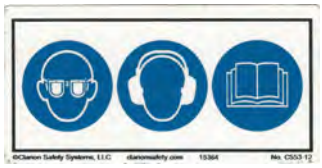
	After set-up
☐	I checked that the machine is safely installed (according to Section 3) and the potential fall path is clear. If the machine is installed at an elevated position, I checked that the machine is safeguarded against falling.
☐	I identified all possible pinch points, such as those caused by rotating parts, and informed the affected personnel.
☐	I planned for containment of any chips or swarf produced by the machine.
☐	I followed the required Maintenance Intervals (Section 5.1) with the recommended lubricants (Section 5.2).
☐	I checked that all affected personnel have the recommended personal protective equipment, as well as any site-required or regulatory equipment.
☐	I checked that all affected personnel understand and are clear of the danger zone.
☐	I evaluated and mitigated any other potential risks specific to my work area.

1.7 LABELS

1.7.1 Label identification

The following warning labels should be on your machine. If any are defaced or missing, contact H&S Tool immediately for replacements.

TABLE 1-4. PB8 POWER BEVELER LABELS

	P/N 100342 PB8 Power Beveler		P/N 87265 Black arrow on a yellow field
	P/N 59042 Warning label: danger of hand caught in moving parts		P/N 100341 PB8 shipping box label
	P/N 87259 H&S serial plate		P/N 1118888 H&S Tool, A Climax company
	P/N 87271 Warning label: use eye and ear protection, and read the operating manual		P/N 87272 Made in the U.S.A.

1.7.2 Label location

The following figures display the location of the labels on each of the components of the PB8 Power Beveler:

FIGURE 1-1. PB8 POWER BEVELER, PNEUMATIC LABEL LOCATIONS

Label P/N: 100342, 59042, 87259. 87265, 87271, 87272

FIGURE 1-2. PB8 POWER BEVELER, ELECTRIC LABEL LOCATIONS

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2 OVERVIEW

IN THIS CHAPTER:

2.1 FEATURES AND COMPONENTS

The PB8 Power Beveler is a portable, gear-driven, inside-diameter (ID)-mounted, single or dual-point beveling and facing machine for use on workpieces with an ID of 2" (50.8mm) to 8.625" (219.1mm) OD.

Principle components include the following:

Drive options: Available with a 3hp pneumatic or a 2.5hp electric motor.

Wedge mounting system—The wedge mounting system secures the PB8 to the workpiece. It is self-centering and quickly adapts to a wide pipe range.

Tool holder—Accepts SM type blades, two can be used at a time. The blades are easily changed without fully retracting the tool holder.

Torque free operation—Once securely mounted the PB8 Power Beveler requires no additional effort to operate aside from turning the feed handle.

Two piece design—Allows for easy handling by a single person.

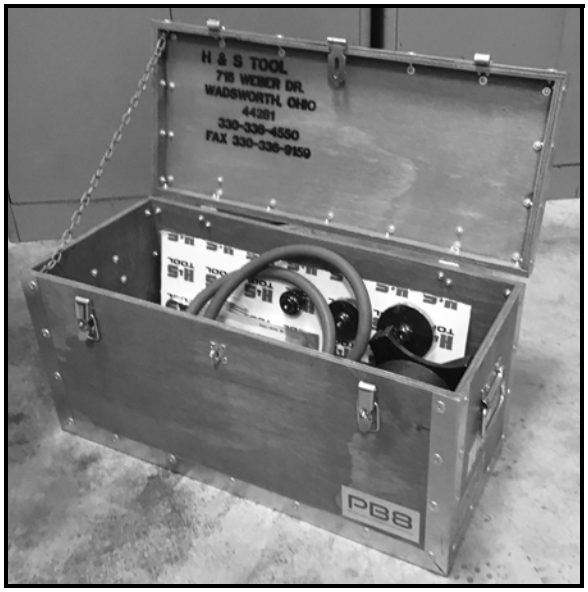

FIGURE 2-1. PB8 AND SHIPPING CONTAINER

2.2 CONTROLS

Depending on the users requirements, the PB8 Power Beveler can be powered by either a pneumatic or electric motor. The controls for each type of motor follow.

WARNING

Always stop the machine and disconnect any power supply before making adjustments to controls or machine components. Failure to follow this safety precaution may result in severe injury.

2.2.1 Pneumatic motor controls

The pneumatic motor used on the PB8 Power Beveler features a throttle lever. When squeezed, the throttle lever actuates the motor; when released, the motor will stop. This is an on or off control only.

A flow control is found on the air hose assembly. It allows adjustment of the motor speed between 0-40 RPM. The colored bands are only for reference and do not represent any set speed increments.

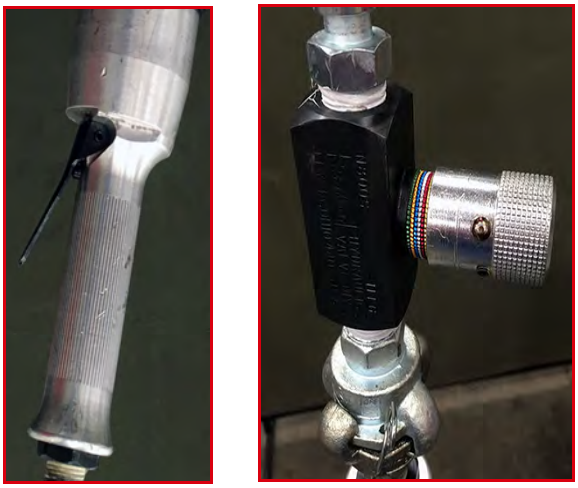

FIGURE 2-2. THROTTLE LEVER (L) FLOW CONTROLS (R)

2.2.2 Electric motor controls

The electric motor controls are similar to a drill or drill driver. The trigger is squeezed to actuate the motor, when released the motor will stop. A speed dial is found on the one side of the motor and a power control dial on the other.

The electric motor has a directional selector not used with the PB8 Power Beveler.

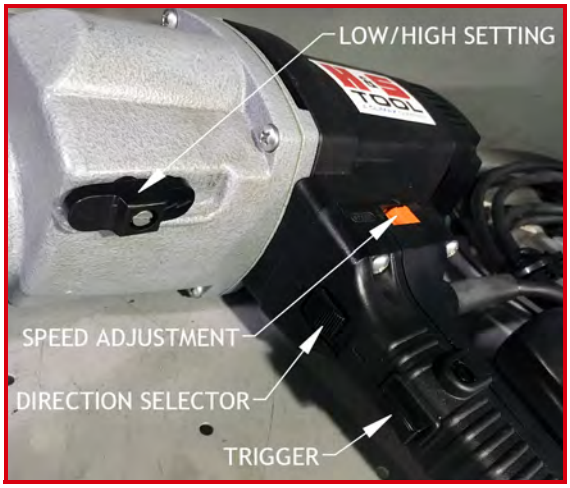

FIGURE 2-3. SPEED DIAL AND TRIGGER CONTROLS

A low/high gearing selector is located at the front of the motor. One arrow indicates the low position while two arrows indicates the high position. When set between the two, the motor will be in neutral.

WARNING

Do not take any measures to lock the throttle or the trigger in the on position. Failure to follow this safety precaution may result in severe injury.

2.3 DIMENSIONS

Figures 2-4 and 2-5 show the machine and operating dimensions.

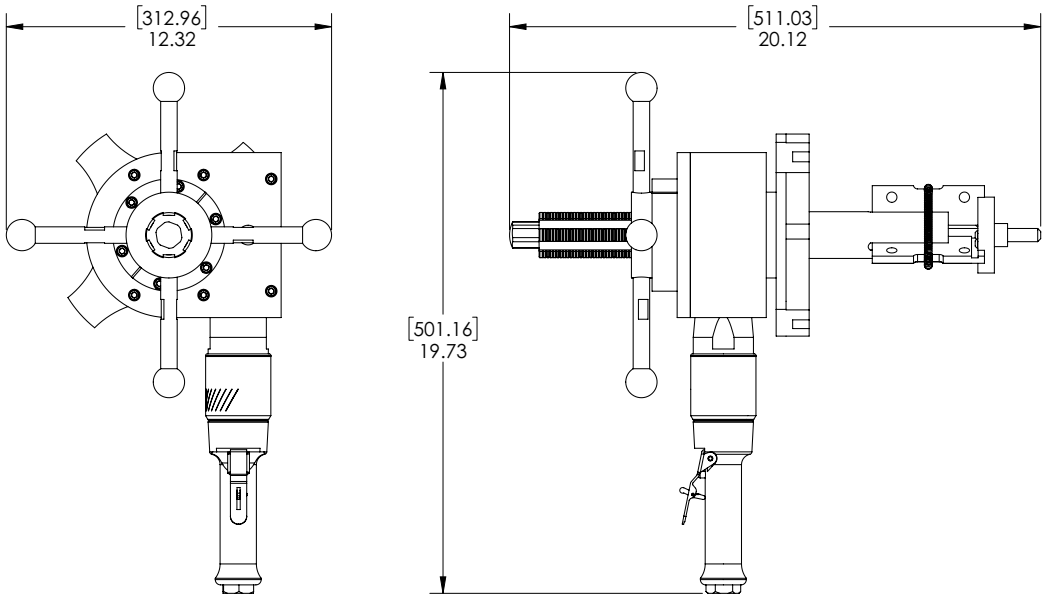

FIGURE 2-4. PB8 POWER BEVELER PNEUMATIC DIMENSIONS (P/N PB8PN)

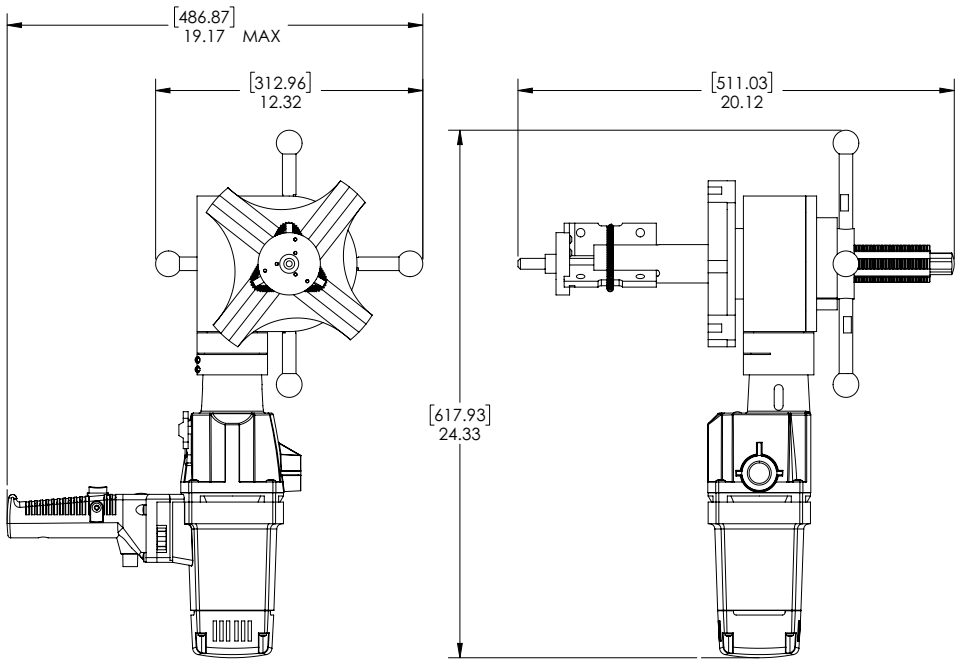

FIGURE 2-5. PB8 POWER BEVELER ELECTRIC DIMENSIONS (P/N PB12EL)

2.4 SPECIFICATIONS

TABLE 2-1. SUB-COMPONENT MASS

P/N	Component	Mass in lbs (kg)
PB8PN	PB8 Power Beveler Pneumatic	50.5 (22.9)
PB8EL	PB8 Power Beveler Electric	57.5 (26)
	Center shaft assembly	10 (4.5)

2.5 ITEMS REQUIRED BUT NOT SUPPLIED

The following items are required but not supplied in your H&S product kit:

- Tape measure or steel ruler

3 SETUP

IN THIS CHAPTER:

This section describes the setup procedures for the PB8 Power Beveler.

3.1 RECEIPT AND INSPECTION

Your H&S product was inspected and tested prior to shipment then packaged for normal shipment conditions. H&S does not guarantee the condition of your machine upon delivery.

When you receive your H&S product, perform the following receipt checks:

1. Inspect the shipping containers for damage.
2. Check the contents of the shipping containers against the included invoice to make sure that all components have been shipped.
3. Inspect all components for damage.

Contact H&S immediately to report damaged or missing components.

NOTICE

Keep the shipping container and all packing materials for future storage and shipping of the machine.

3.2 MACHINE SETUP

Do the following to setup the PB8 Power Beveler:

1. Complete the risk assessment checklist in Table 1-2 on page 5.
2. Measure the ID of the pipe to be machined and determine the size of expansion wedges to be used. Use three of the same size expansion wedges.
3. Based on the expansion wedges required, select the appropriate wedge guide:
   a) The 1.75” (44.5mm) wedge guide is used for expansion wedges from 2” (50.8mm) to 3” (76.2mm).
   b) The 2.875” (73mm) wedge guide is used for expansion wedges from 3” (76.2mm) to 4” (101.6mm).
   c) The 4” (101.6mm) wedge guide is used for the expansion wedges from 4” (101.6mm) to 8.50” (215.9mm).
4. Slide the three expansion wedges into the slots on the wedge guide. The notch for the springs should face out.

FIGURE 3-1. INSTALLING WEDGE PLATES

5. Join the required number of springs together end-to-end to hold the wedges in position on the wedge guide. Install the springs around the expansion wedges, seating the springs in the notch.

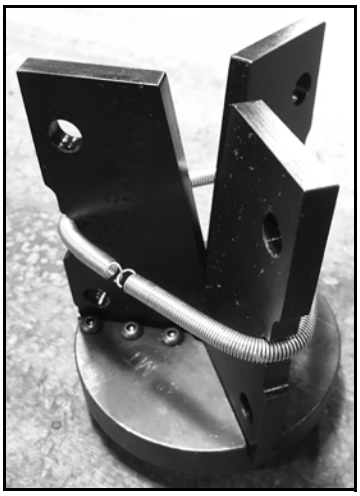

FIGURE 3-2. FITTING AND INSTALLING THE SPRINGS

6. Slide the wedge guide assembly (expansion wedges, wedge guide and springs) onto non-threaded end of the center shaft. Align the expansion wedges with the slots in the center shaft.

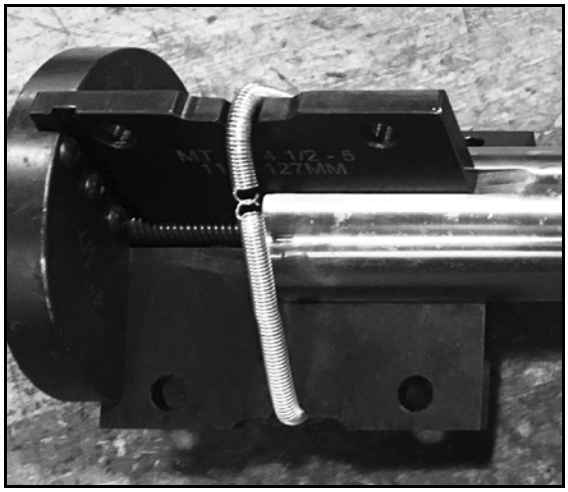

FIGURE 3-3. INSTALLATION OF THE WEDGE GUIDE ASSEMBLY

7. Insert the draw rod through the threaded end of the center shaft and thread into the guide plate.

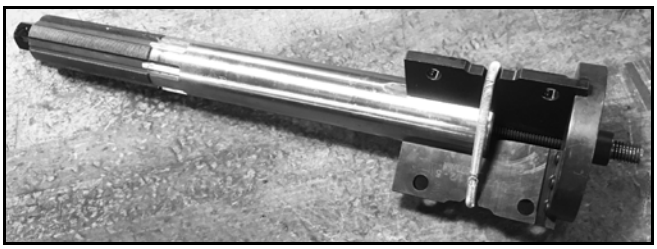

FIGURE 3-4. COMPLETED CENTER SHAFT SUB-ASSEMBLY

3.3 MACHINE MOUNTING

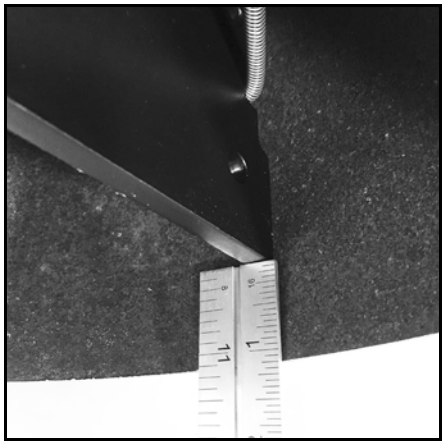

FIGURE 3-5. INSTALLED CENTER SHAFT ASSEMBLY

Do the following to mount the PB8 Power Beveler on the workpiece:

1. Insert the center shaft sub-assembly (See “Machine Setup” on page 15.) into the workpiece until there is approximately 1” to 2” (25.4-50.8mm) between the end of the expansion wedges and the face of the workpiece.This will provide enough material for most facing and OD beveling procedures.

For ID beveling, the expansion wedges must be placed 1” (25.4mm) deeper than the blade will cut.

2. Tighten the wedge system using the supplied 15/16” combination wrench to turn the nut end of the draw rod. Once snug, verify that the wedge systems position in the workpiece has been maintained then completely tighten the wedge system.

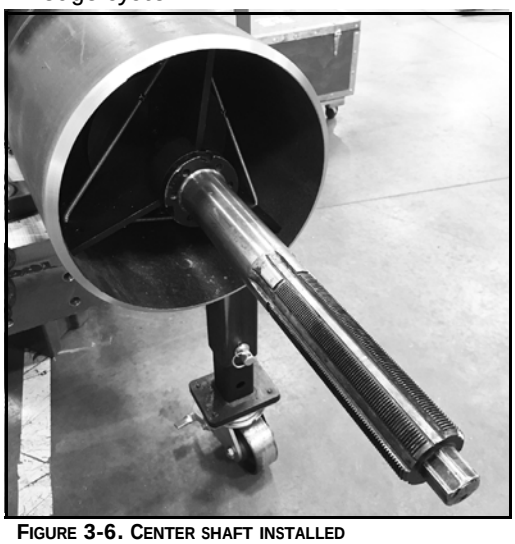

FIGURE 3-6. CENTER SHAFT INSTALLED

3. The power unit can now be installed onto the center shaft. Aligning the threaded hole on the tool holder side of the machine with the center shaft, slide the power unit onto the center shaft until it stops.
4. Turn the feed handle clock-wise to feed the machine and engage the center shaft with the power unit.
5. Continue to turn the feed handle until .50” (12.7mm) of the center shaft projects from the through the back of the machine.

⚠ WARNING

Check that the wedge system has been fully tightened. After the machine has made 2-3 revolutions during operation, recheck the wedge system for tightness in the pipe.

3.4 INSTALLING THE CUTTING TOOLS

The tool holder has four slots for the SM type blades.

Do the following to install the blades:

1. Advance the tool holder towards the workpiece by turning the feed handle. This will help with alignment of the blade to the workpiece.
2. Slide the blade into the slot of the tool holder with the beveled cutting edge facing the direction of rotation. Reference the rotation label on the machine.
3. Align the cutting edge of the blade to cut the full width of the workpiece wall.

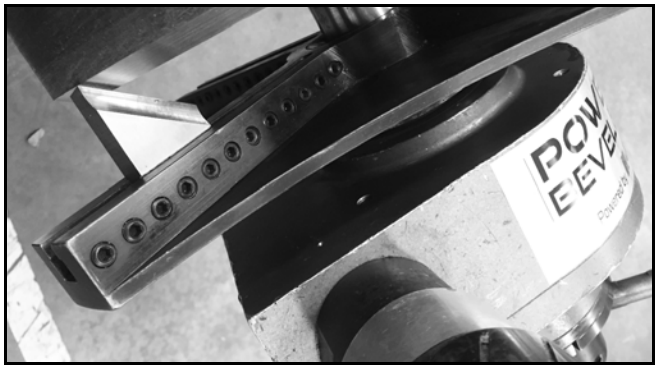

FIGURE 3-7. SINGLE CUTTING BIT INSTALLED

4. If using two blades, install the second blade opposite (180°) to the first. Orientate the beveled cutting edge facing the direction of rotation.
5. Tighten the set screws to secure the cutting blade(s) in the tool holder.

TIP:

The PB8 Power Beveler can be operated with one blade. Smoother operation on harder materials or thicker pipe walls will result with the use of two blades.

3.5 MOTORS

The PB8 Power Beveler is powered by either a pneumatic motor or an electric motor. The following subsections explain how to set up each for operation.

3.5.1 Pneumatic motor

Do the following to prepare the pneumatic motor for use (See Section 2.2 for controls):

1. Connect the air flow control end of the air hose assembly to the pneumatic drive motor. Secure with the lock pin.
2. Connect the air supply line to the in-line oiler/filter end of the air hose assembly. Secure with the lock pin.
3. Verify that the flow control is completely open. The yellow ring will be visible on the flow control when it is set to maximum air flow.

3.5.2 Electric motor

Do the following to prepare the electric motor for use (See Section 2.2 for controls):

1. On the drive controls, verify the following settings:
   a) Direction: Forward ONLY.
   b) Power: Minimum, set the dial all the way towards the minus symbol.
   c) Speed: Maximum, set the dial all the way towards the plus symbol.
   d) High/Low: Low, set towards the single arrow.
2. Plug the drive into an OSHA certified power source or consult a licensed electrician for additional power supply options.

4 OPERATION

IN THIS CHAPTER:

4.1 PRE-OPERATION CHECKS

Do the following checks before operating the machine:

1. Complete the risk assessment checklist in Table 1-3 on page 5.
2. Check that the work area is clear of non-essential personnel and equipment.
3. Check that the machine control/observation area will not be in the path of hot, flying chips during machine operation.
4. Check the machine is securely mounted to the workpiece, according to Section 3.3 on page 16.
5. Check that hoses and electric cords are routed and secured to avoid tripping, entanglement, damage from hot chips, or other damage should an air hose or connection fail.
6. Check the cutting tool condition and sharpness.
7. On the in-line air lubricator, verify that oil is present in the sight glass. (See Section 5.3.1)
8. Check that all hand tools are removed from inside the machine and the work area.
9. Check that the cutting blade is retracted from the workpiece.

4.2 OPERATION

The PB8 Power Beveler can machine a standard bevel, face or ID bevel. Aside from the use of different blades, operation is the same for all the machining processes. Section 2.2 on page 10 for controls information.

4.2.1 Pneumatic motor

To operate the PB8 Power Beveler with the pneumatic motor do the following:

1. Actuate the motor by squeezing and holding the throttle lever.
2. With the other hand turn the feed handle in the rotational direction indicated by the label on the machine. This will advance the cutting tool into the workpiece.

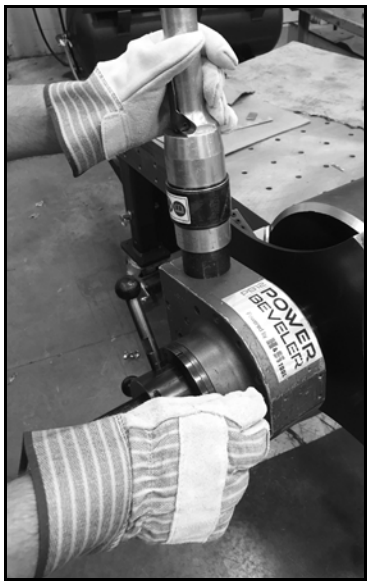

FIGURE 4-1. HAND POSITIONING ON THE PNEUMATIC PB8.

3. Once the blade has engaged the workpiece, maintain constant pressure by turning the feed handle, until the required machining is complete.
4. To achieve optimal cutting and finish, See “Adjusting the machine settings” on page 21.
5. Once complete, allow the machine to make a few revolutions without feeding the cutting tool to clean up the machined surface.
6. Reverse the rotation of the feed handle 2-3 revolutions to back the cutting tool away from the workpiece.
7. Release the throttle lever to stop the machine.
8. To remove the PB8 Power Beveler from the workpiece do the following:
   a) Turn off the air supply at the source. Disconnect the air hose assembly from the machine.
   b) If separating the machine from the center shaft for ease of moving, turn the feed handle counter-clockwise until the threads disengage. Then slide the power unit off of the center shaft.
   c) To loosen the center shaft from the workpiece: turn the nut end of the draw rod counter-clockwise using the 15/16” combination wrench until the wedge plates are free from the workpiece.
   d) Slide the center shaft assembly or the complete PB8 Power Beveler straight out from the workpiece.

⚠ WARNING

Always pick up and move the PB8 Power Beveler by the body of the machine. Never pick up the PB8 Power Beveler by the throttle lever section of the air motor as actuation of the motor could occur and lead to severe injury. Never pick up the PB8 Power Beveler by the air hose assembly as it could become detached and result in injury or damage to the machine.

4.2.2 Electric motor

To operate the PB8 Power Beveler with the electric motor do the following:

1. Start the motor by squeezing and holding the trigger.
2. With the other hand turn the feed handle in the rotational direction indicated by the label on the machine. This will advance the cutting tool into the workpiece.
3. Once the blade has engaged the workpiece, maintain constant pressure by turning the feed handle, until the required machining is complete.
4. To achieve optimal cutting and finish, See “Adjusting the machine settings” on page 21.
5. Once complete, allow the machine to make a few revolutions without feeding the cutting tool to clean up the machined surface.

6. Reverse the rotation on the feed handle 2-3 revolutions to back the cutting tool away from the workpiece.
7. Release the trigger to stop the machine.
8. To remove the PB8 Power Beveler from the workpiece do the following:
   a) Unplug or disconnect the power supply from drive motor. Lock out/tag out where applicable.
   b) If separating the machine from the center shaft for ease of moving, turn the feed handle counter-clockwise until the threads disengage. Then slide the power unit off of the center shaft.
   c) To loosen the center shaft from the workpiece: turn the nut end of the draw rod counter-clockwise using the 15/16" combination wrench until the wedge plates are free from the workpiece.
   d) Slide the center shaft assembly or the complete PB8 Power Beveler straight out from the workpiece.

⚠ WARNING

Always pick up and move the PB8 Power Beveler by the body of the machine. Never pick up the PB8 Power Beveler by the handle section of the electric driver as actuation of the motor could occur and lead to severe injury. Never pick up the PB8 Power Beveler by electrical cord as it could result in damage to the machine.

4.3 ADJUSTING THE MACHINE SETTINGS

⚠ WARNING

Do not adjust any setting on either of the drives without first disconnecting the air or power supply.

When using either drive motor, the rate at which the cutting tool is fed into the workpiece can be adjusted to produce a better cut and/or reduce chatter.

Depending on the material and/or wall size of the workpiece the motor settings can be adjusted for optimal cutting.

4.3.1 Pneumatic motor

Adjustments that can be made to the pneumatic motor are as follows:

1. The flow control can be adjusted by turning the knob to reveal more or less of the colored rings. To slow the rotation of the machine, conceal the rings, to accelerate the machines rotation, reveal more of the rings.

4.3.2 Electric motor

Adjustments that can be made to the electric motor are as follows:

1. The speed of the electric motor can be adjusted with the dial on the side of the drive. In less common applications, the power of the electric motor can also be adjusted with the dial on the other side of the drive.

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5 MAINTENANCE

IN THIS CHAPTER:

5.1 MAINTENANCE CHECKLIST

Table 5-1 lists maintenance intervals and tasks

TABLE 5-1. MAINTENANCE INTERVALS AND TASKS

Interval	Task	Reference
Before each use	Check that oil is present in the sight glass on the in-line oiler, refill as needed.	5.3.1
	Check air lines for damage and wear.	--
	Check the cutting tool for sharpness. Replace as necessary.	--
	Check the oil level in the gear case, refill as needed.	5.3.4
Before and after each use	Remove debris, oil, and moisture from machine surfaces.	--
Every ten operation cycles	Lubricate center shaft threads.	--
	Adjustment of the oil flow rate	5.3.3
	Filter element service	5.3.2

5.2 APPROVED LUBRICANTS

H&S recommends using the following lubricants at the locations indicated.

Failure to use the appropriate lubricants can result in damage and premature machine wear.

⚠ CAUTION

Avoid damage, premature machine wear, and protect your warranty by using only approved lubricants.

TABLE 5-2. APPROVED LUBRICANTS

Application Area	Lubricant	Biodegradable Lubricant	Viscosity (cSt)	Quantity	Frequency
Threads of the center shaft	WD-40 or lightweight spray lube	N/A	2.79-2.96 @ 100C	Light coating applied by spray	Daily during machine use
In-liner oiler	MOBIL ALMO 525 or 10W SAE oil	N/A	46 @ 40C	Fill oil lubricator body	Each use
Unpainted Surfaces	LPS1 or LPS2	N/A	38 @ 25C	As required	Each use, and before storage
Roller bearings in the tool holder hub	NOOK PAG-1 grease	N/A	113 @ 100C	Light coating applied by hand	Weekly during machine use
Gear case oil	Mobilgear 600 XP 150 or 80/90W gear oil	N/A	150 @40C	14oz (.414L)	Every 40 hours of use

5.3 MAINTENANCE TASKS

Maintenance tasks are described in the following sections.

5.3.1 Checking and filling the in-line oiler reservoir

Do the following to check and fill the in-line oiler:

1. Check sight glass on the oil reservoir for the presence of oil.
2. To refill: Remove the cap, fill the reservoir and replace the cap.

FIGURE 5-1. IN-LINE OILER SIGHT GLASS

5.3.2 Servicing the filter element

See Figure A-11 on page 40 for parts list.

Do the following service the filter element:

1. Remove the filter nut to access the filter element.
2. Slide the filter element out of the filter housing.
3. Clean the filter element with a solvent and compressed air.
4. Reassemble the filter and replace the filter nut.

5.3.3 Adjusting the oil flow rate of the in-line oiler

⚠ WARNING

To adjust the oil flow rate the machine must be mounted as if being used. ALL operating and safety precautions must be taken to avoid injuries.

Different lubricants and environments may effect the rate of the in-line oiler.

Do the following to adjust the oil flow rate:

1. Remove the cap and check the oil level. Refill as needed.
2. Set the oiler valve to '3' as a baseline for the flow rate.
3. Replace the cap.
4. Mount and setup the machine (see Section 3.2-3.5)
5. Squeeze and hold the throttle lever to run the machine.
6. Hold a sheet of white paper approximately 4" (101mm) in front of the exhaust ports on the pneumatic motor. If adjusted correctly, there will be a light splatter of oil on the paper after a few seconds of operation.
7. If the oil rate needs adjusted, disconnect the air supply line from the air filter end of the air hose assembly.
8. Repeat Step 1.
9. The larger the number on the oiler valve the higher the oil flow rate. Adjust as required.
10. Replace the cap and retest the machine for corrected oil flow rate.

5.3.4 Gear case oil

Do the following to check the level of the gear case oil:

1. Position the machine on a level surface with the tool holder facing down.
2. Remove the drain/filler plug.
3. Observed from the drain/filler opening, the oil level should be to the top of the worm gear. Add oil as needed but do not overfill.

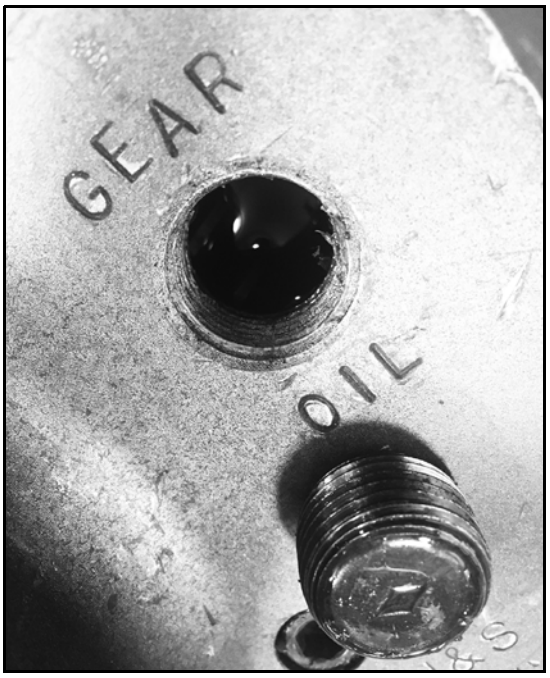


FIGURE 5-2. FILL/ DRAIN PLUG

4. Replace the drain/filler plug.

After 40 hours of use the gear case oil is to be replaced. Do the following to replace the gear case oil:

1. Remove the drain/filler plug.
2. Drain the existing oil from the machine.
3. Refill the gear case with 14oz (.414L) of 80/90W gear oil.
4. Replace the drain/filler plug.

5.4 TROUBLESHOOTING

This section is intended to help you solve basic machine performance problems. For serious maintenance or if you have questions on the following procedures, contact H&S.

5.4.1 The machine isn't turning

If the machine is not rotating, check the following:

1. The air supply line is connected and sufficient air pressure is present (pneumatic motor only).
2. The power source is connected and energized (electric motor only).
3. The hoses to the hydraulic motor are connected correctly to the power pack and the power pack is energized.
4. On the pneumatic motor, the air flow regulator is not completely closed.
5. The Low/High setting on the electric motor is not in the neutral position.
6. On the electric motor, the speed and power dials are set high enough to rotate the machine (See Section 3.5).

5.4.2 The machine isn't feeding

If the machine isn't feeding properly, check the following:

1. The center shaft is properly installed in the machine and .50" (12.7mm) projects through the back of the machine.

5.4.3 The machine is performing poorly

If the machine is performing poorly, check the following:

1. The cutting tool is installed correctly.
2. The machine is tight to the workpiece.
3. The cutting tool or insert is sharp and has the correct geometry for the material and type of cut.
4. Electric motor:
   a) The speed and power dials are set correctly.
   b) The low/high gear is set correctly.
5. Pneumatic motor:
   a) The air flow regulator is set correctly.
   b) There is oil in the in-line oiler.
   c) The air supply to the machine is sufficient in both quantity and pressure: 90 PSI (6.2 Bar) @ 65 CFM (1.9m3/min).

IN THIS CHAPTER:

6.1 STORAGE

Proper storage of the PB8 Power Beveler will extend its usefulness and prevent undue damage.

Store the PB8 Power Beveler in its original shipping container. Keep all packing materials for repackaging the machine (see Figure 6-1).

6.1.1 Short-term storage

Do the following for short-term storage (three months or less):

1. Remove the tooling.
2. Remove hoses.
3. Clean the machine to remove dirt, grease, metal chips, and moisture.
4. Drain all liquids from the in-line pneumatic oiler (PB8PN only) and gear case.
5. Spray all unpainted surfaces with LPS-2 to prevent corrosion.

6.1.2 Long-term storage

Do the following for long-term storage (longer than three months):

1. Follow the short-term storage instructions, but use LPS-3 instead of LPS-2.
2. Add a desiccant pouch to the shipping container. Replace according to manufacturer instructions.
3. Store the shipping container in an environment out of direct sunlight with temperature < 70ºF (21ºC) and humidity < 50%.

6.2 SHIPPING

The PB8 Power Beveler can be shipped in its original storage container, as shown in Figure 6-1.

FIGURE 6-1. PB8 POWER BEVELER STORAGE CONTAINER

6.3 DECOMMISSIONING

To decommission the PB8 Power Beveler prior to disposal, remove the drive motor and dispose of it separately from the rest of the machine components. Refer to Appendix A for component assembly information.

APPENDIX A ASSEMBLY DRAWINGS

Drawing list

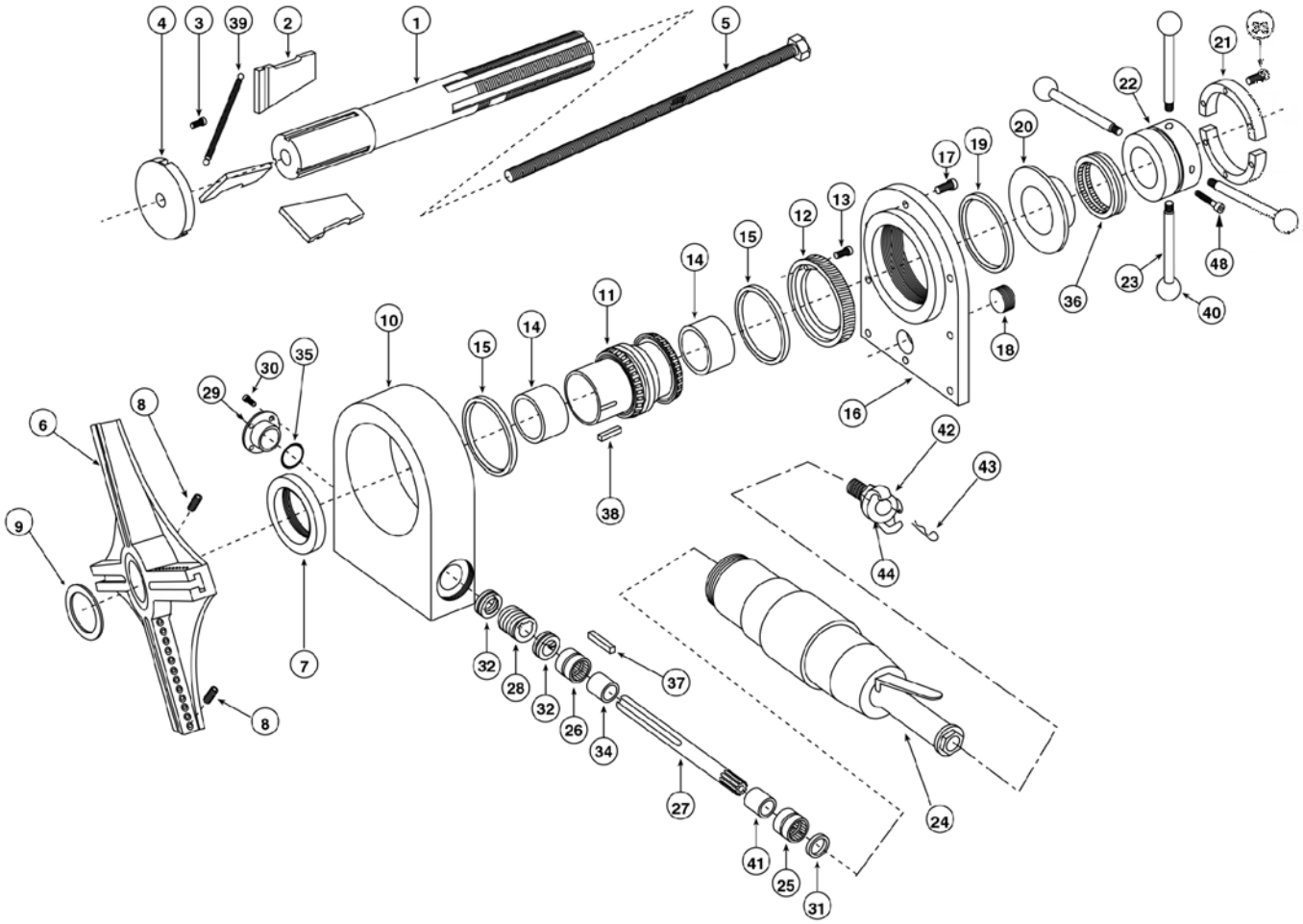


FIGURE A-1. PB8 POWER BEVELER, PNEUMATIC ASSEMBLY (P/N PB8PN)

15	2	ROLLER BEARING	MT260535	48		SCREW, FEED NUT	MT260846
14	2	NEEDLE BEARING	MT260534	44		CLAW FITTING RUBBER SEAL	2152020
13	6	SCREW, WORM GEAR	MT260533	43		CLAW FITTING LOCK PIN	2152012
12	1	WORM GEAR	MT260532	42	1	1/2-14 NPT CLAW FITTING AIR CONNECTOR	2151012
11	1	CENTER HUB	MT260531	41	1	INNER RACE	MT260563
10	1	FRONT HOUSING	MT260530	40	4	CONTROL KNOB	MT260562
9	1	SEAL, TOOL HOLDER	MT260529	39	3	SPRING	MT260561
8	24	SCREW, TOOL HOLDER	MT260528	38	2	HUB KEY	MT260559
7	1	SEAL, FRONT HOUSING	MT260527	37		DRIVESHAFT KEY	MT260558
6	1	TOOL HOLDER	MT260526	36	1	THRUST BEARING	MT260557
5	1	DRAW ROD	MT260525	35	1	O-RING	MT260556
		4.0" WEDGE GUIDE	MT260569	34	1	INNER RACE	MT260555
		2.875" WEDGE GUIDE	MT260568	33	6	SCREW, RETAINER RING	MT260554
4	1	1.75" WEDGE GUIDE	MT260524	32	2	THRUST BEARING	MT260553
3	9	SCREW, WEDGE GUIDE	MT260523	31	1	SEAL, DRIVESHAFT	MT260552
		8.0 - 8.5" (203.2 - 215.9mm)	MT260579	30	4	SCREW, ACCESS CAP	MT260551
		7.5 - 8.0" (190.5 - 203.2mm)	MT260578	29	1	ACCESS CAP	MT260550
		7.0 - 7.5" (177.8 - 190.5mm)	MT260577	28	1	WORM GEAR	MT260549
		6.5 - 7.0" (165.1 - 177.8mm)	MT260576	27	1	DRIVESHAFT	MT260548
		6.0 - 6.5" (152.4 - 165.1mm)	MT260575	26	1	DRIVESHAFT BEARING, REAR	MT260582
		5.5 - 6.0" (139.7 - 152.4mm)	MT260574	25	1	DRIVESHAFT BEARING, FRONT	MT260547
		5.0 - 5.5" (127.0 - 139.7mm)	MT260573	24	1	AIR MOTOR	MT260546
		4.5 - 5.0" (114.3 - 127.0mm)	MT260572	23	4	FEED HANDLE	MT260545
		4.0 - 4.5" (101.6 - 114.3mm)	MT260571	22	1	FEED NUT	MT260544
		3.5 - 4.0" (88.9 - 101.6mm)	MT260570	21	1	FEED NUT RETAINER RING	MT260543
		3.0 - 3.5" (76.2 - 88.9mm)	MT260581	20	1	CENTERSHAFT LOCK	MT260542
		2.5 - 3.0" (63.5 - 76.2mm)	MT260580	19	1	SEAL, REAR HOUSING	MT260541
		2 - 2.5" (50.8 - 63.5mm)	MT260522	18	1	PIPE PLUG	MT260540
2	3	EXPANSION WEDGE		17	8	SCREW, REAR HOUSING	MT260539
1	1	CENTER SHAFT	MT260521	16	1	REAR HOUSING	MT260538
ITEM NO.	**QTY.**	**PART NAME**	**PART NUMBER**	**ITEM NO.**	**QTY.**	**PART NAME**	**PART NUMBER**

FIGURE A-2. PB8 POWER BEVELER, PNEUMATIC PARTS LIST (P/N PB8PN)

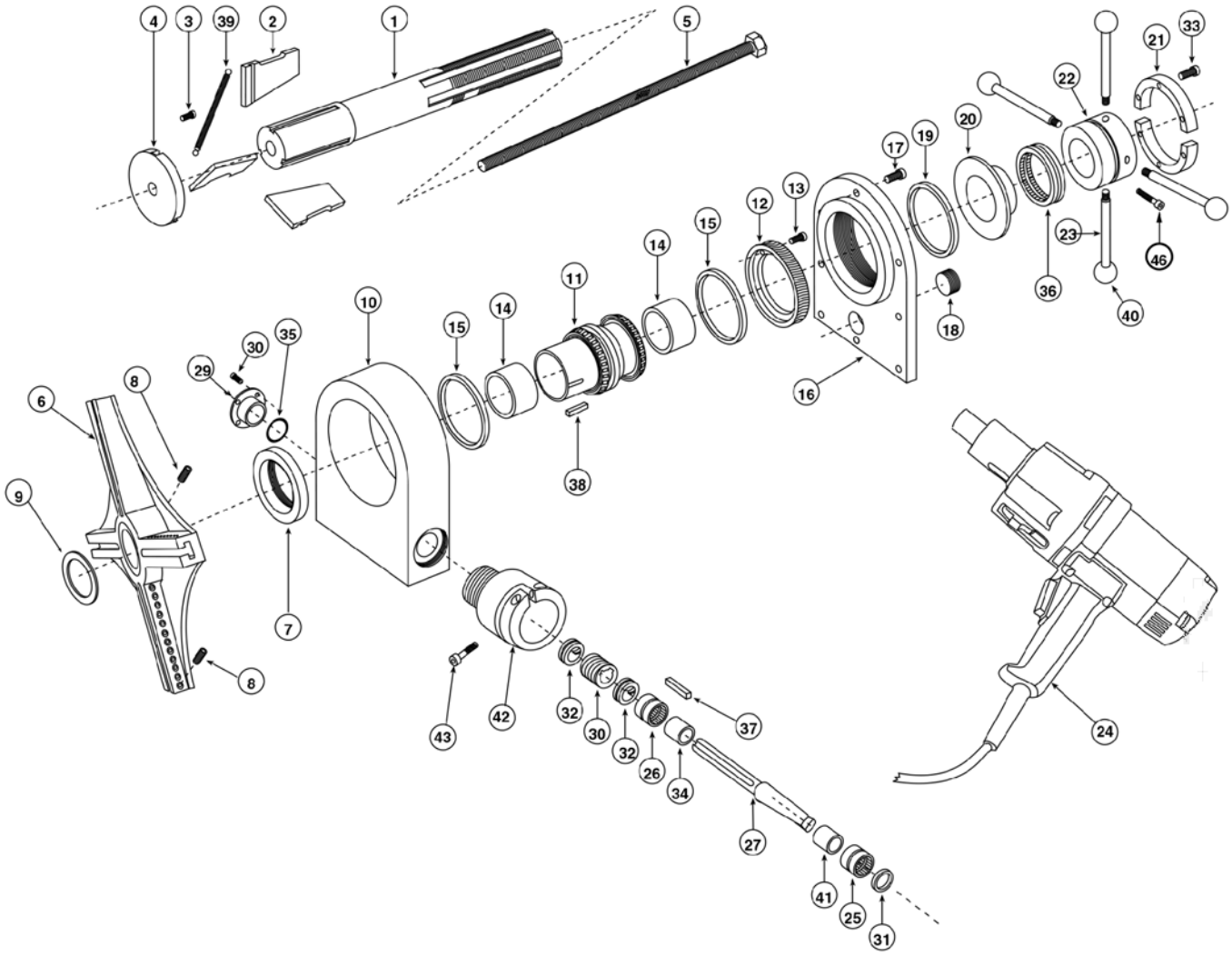
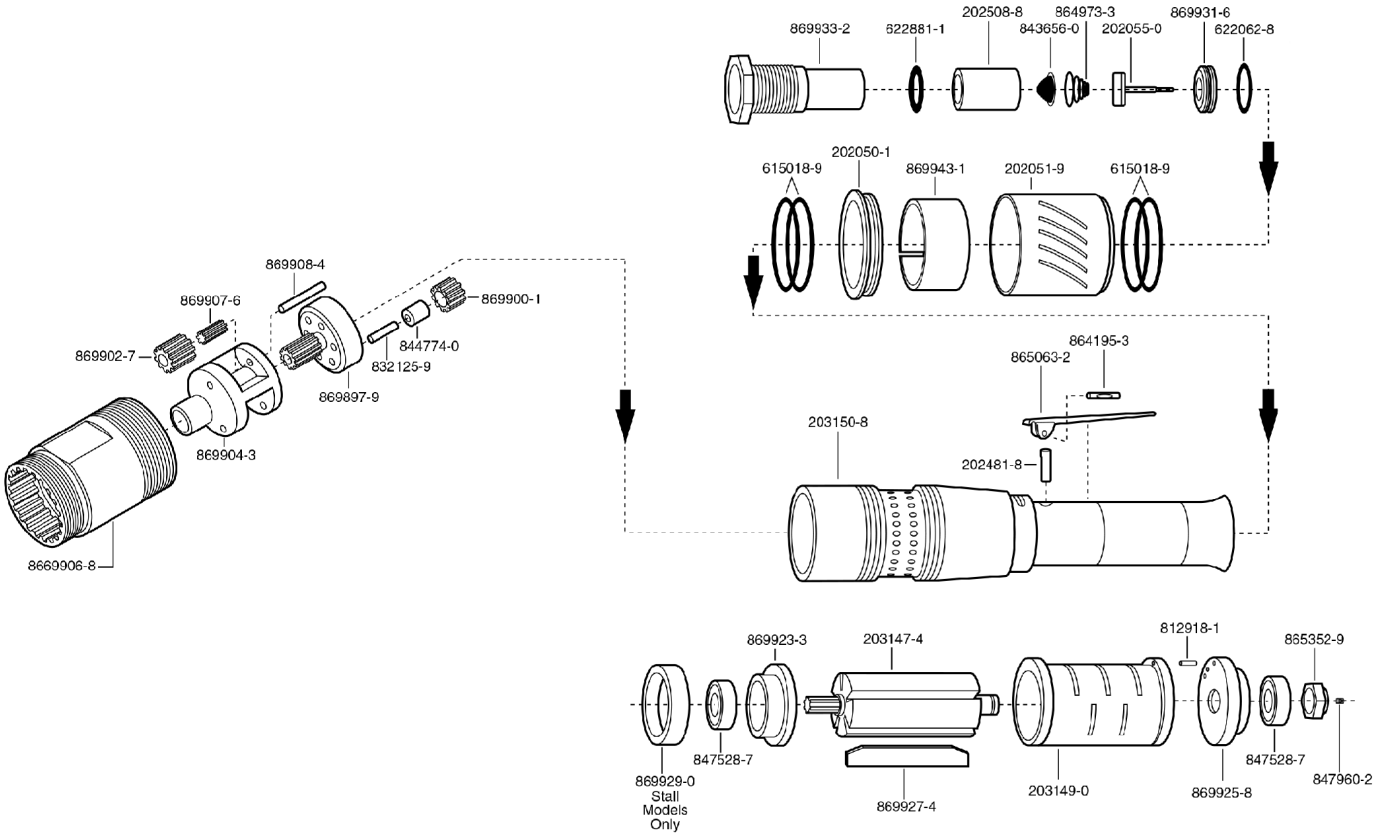


FIGURE A-3. PB8 POWER BEVELER, ELECTRIC ASSEMBLY (P/N PB8EL)

15	2	ROLLER BEARING	MT260535				
14	2	NEEDLE BEARING	MT260534	46	1	SCREW, FEED NUT	MT260846
13	6	SCREW, WORM GEAR	MT260533	43	1	SCREW, MOTOR ADAPTER	EMT260513
12	1	WORM GEAR	MT260532	42	1	MOTOR ADAPTER	EMT260512
11	1	CENTER HUB	MT260531	41	1	INNER RACE	MT260563
10	1	FRONT HOUSING	MT260530	40	4	CONTROL KNOB	MT260562
9	1	SEAL, TOOL HOLDER	MT260529	39	3	SPRING	MT260561
8	24	SCREW, TOOL HOLDER	MT260528	38	2	HUB KEY	MT260559
7	1	SEAL, FRONT HOUSING	MT260527	37		DRIVESHAFT KEY	MT260558
6	1	TOOL HOLDER	MT260526	36	1	THRUST BEARING	MT260557
5	1	DRAW ROD	MT260525	35	1	O-RING	MT260556
		4.0" WEDGE GUIDE	MT260569	34	1	INNER RACE	MT260555
		2.875" WEDGE GUIDE	MT260568	33	6	SCREW, RETAINER RING	MT260554
4	1	1.75" WEDGE GUIDE	MT260524	32	2	THRUST BEARING	MT260553
3	9	SCREW, WEDGE GUIDE	MT260523	31	1	SEAL, DRIVESHAFT	MT260552
		8.0 - 8.5" (203.2 - 215.9mm)	MT260579	30	4	SCREW, ACCESS CAP	MT260551
		7.5 - 8.0" (190.5 - 203.2mm)	MT260578	29	1	ACCESS CAP	MT260550
		7.0 - 7.5" (177.8 - 190.5mm)	MT260577	28	1	WORM GEAR	MT260549
		6.5 - 7.0" (165.1 - 177.8mm)	MT260576	27	1	DRIVESHAFT	EMT260511
		6.0 - 6.5" (152.4 - 165.1mm)	MT260575	26	1	DRIVESHAFT BEARING, REAR	MT260582
		5.5 - 6.0" (139.7 - 152.4mm)	MT260574	25	1	DRIVESHAFT BEARING, FRONT	MT260547
		5.0 - 5.5" (127.0 - 139.7mm)	MT260573	24	1	ELECTRIC MOTOR	EMT260510
		4.5 - 5.0" (114.3 - 127.0mm)	MT260572	23	4	FEED HANDLE	MT260545
		4.0 - 4.5" (101.6 - 114.3mm)	MT260571	22	1	FEED NUT	MT260544
		3.5 - 4.0" (88.9 - 101.6mm)	MT260570	21	1	FEED NUT RETAINER RING	MT260543
		3.0 - 3.5" (76.2 - 88.9mm)	MT260581	20	1	CENTERSHAFT LOCK	MT260542
		2.5 - 3.0" (63.5 - 76.2mm)	MT260580	19	1	SEAL, REAR HOUSING	MT260541
		2 - 2.5" (50.8 - 63.5mm)	MT260522	18	1	PIPE PLUG	MT260540
2	3	EXPANSION WEDGE		17	8	SCREW, REAR HOUSING	MT260539
1	1	CENTER SHAFT	MT260521	16	1	REAR HOUSING	MT260538
ITEM NO.	**QTY.**	**PART NAME**	**PART NUMBER**	**ITEM NO.**	**QTY.**	**PART NAME**	**PART NUMBER**

FIGURE A-4. PB8 POWER BEVELER, ELECTRIC PARTS LIST (P/N PB8EL)



1	THROTTLE VALVE SPRING	864973-3	1	IDLER GEAR PIN	869908-4
1	THROTTLE LEVER PIN	864195-3	6	NEEDLE ROLLER (13 PER GEAR)	869907-6
2	ROTOR BEARING	847528-7	3	GEAR CAGE	869904-3
1	SET SCREW	847960-2	1	GEAR CASE (50T)	869906-8
1	AIR INLET SCREEN	843656-0	3	IDLER GEAR (18T)	869902-7
1	CYLINDER PIN	812918-1	3	GEAR (21T) W/ IDLER GEAR BEARING	869928-2
1	O-RING	622881-1	1	SPIDER W/ IDLER GEAR PIN	869897-9
1	O-RING	622062-8	1	IDLER GEAR BEARING	844774-0
4	O-RING	615018-1	39	IDLER GEAR PIN	832125-9
1	HANDLE	203150-8	3	IDLER GEAR	869900-1
1	CYLINDER W/ CYLINDER PIN	203149-0	1	MUFFLER	869943-1
1	ROTOR	203147-4	1	INLET BUSHING	869933-2
1	INLET SPACER	202508-8	5	ROTOR BLADE	869927-4
1	THROTTLE VALVE PIN	202481-8	1	REAR BEARING PLATE	869925-8
1	THROTTLE VALVE	202055-0	1	FRONT BEARING PLATE	869923-3
1	EXHAUST DEFLECTOR	202051-9	1	ROTOR LOCK NUT	865352-9
1	DEFLECTOR SPACER	202050-1	1	THROTTLE LEVER	865063-2
QTY.	**PART NAME**	**PART NUMBER**	**QTY.**	**PART NAME**	**PART NUMBER**

FIGURE A-5. PNEUMATIC MOTOR ASSEMBLY (P/N MFT260546)

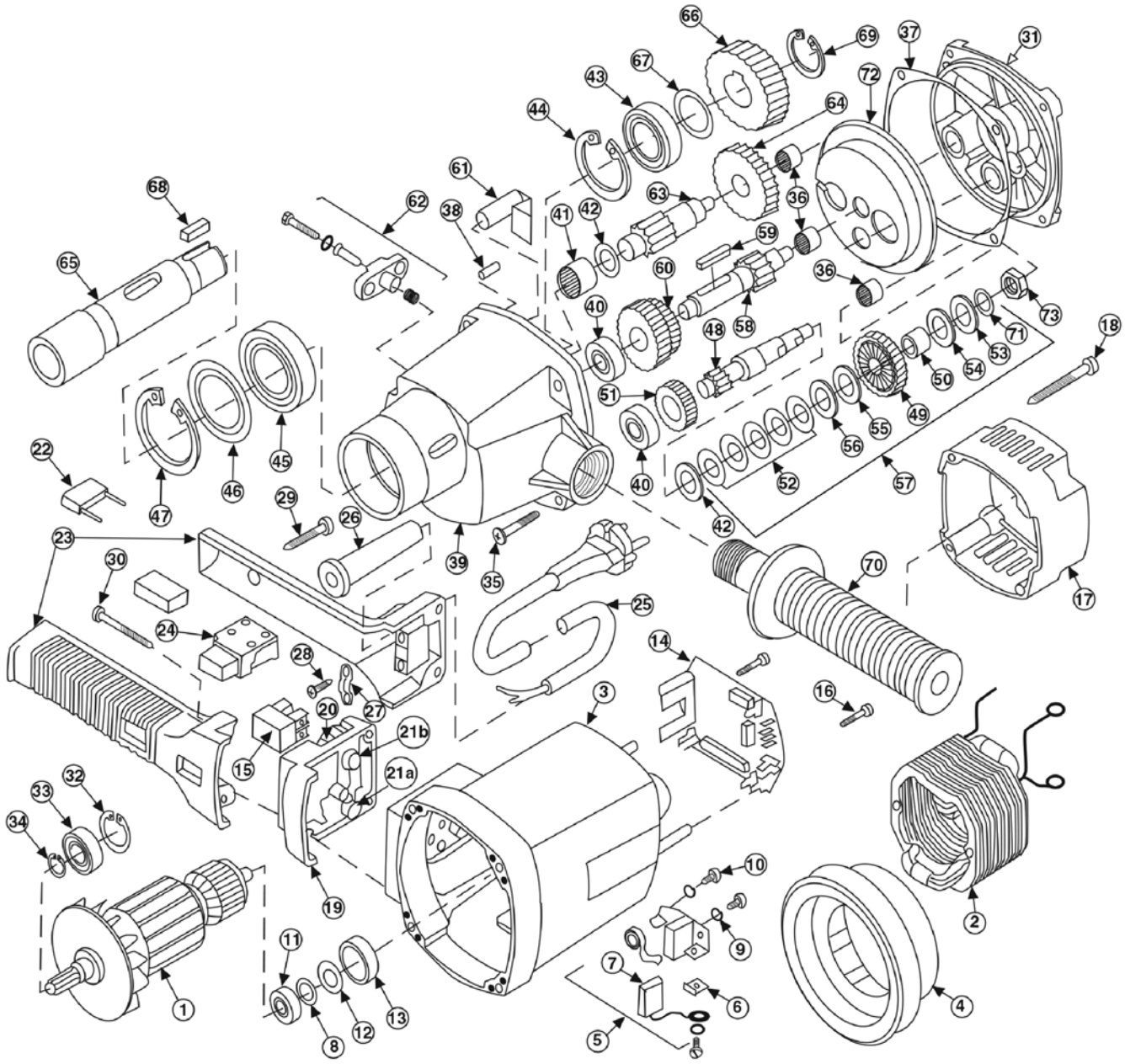
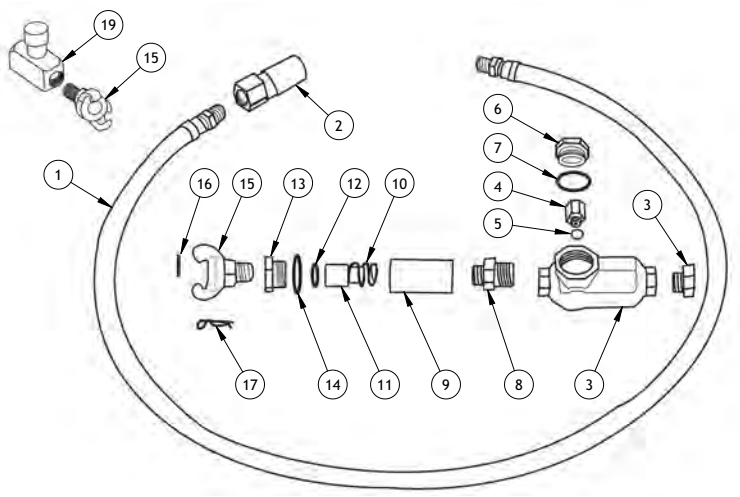


FIGURE A-6. ELECTRIC MOTOR ASSEMBLY (P/N EMT260510)

22	CONDENSER	80500010	48	INTERMEDIATE SHAFT 1	71526490			
21B	TORQUE DIAL	80500070	47	LOCKING RING	80201338	73	HEX NUT, 8MM 10 X 1	80201338
21A	SPEED DIAL, 220V	80500020	46	DISK F GROOVED BALL BEARINGS	71540426	72	GREASE CHAMBER	71540426
20	SELECTOR WHEEL	71521230	45	GROOVED BALL BEARING	80410070	71	DISK SPRING	80410070
19	SPACER	7152B293	44	LOCKING RING	80201336	70	TUBE HANDLE, COMPLETE	80201336
18	(4) SCREW	80201267	43	BALL BEARING	80410061	69	LOCKING RING	80410061
17	MOTOR CAP	7742A240	42	DISK OF NEEDLE BEARING	71540517	68	FITTING SPRING	71540517
16	(2) SCREW	80201260	41	NEEDLE BEARING	80420001	67	FITTING DISK	80420001
15	REVERSER	80600110	40	(2) BEARING	80410020	66	SPINDLE WHEEL	80410020
14	CIRCUIT BOARD, 230V	74326280	39	GEARBOX HOUSING	71521400	65	WORK SPINDLE	71521400
14	CIRCUIT BOARD, 120V	74329280	38	NOTCHED PIN, 5 X 16	80200580	64	INTERMEDIATE GEAR 2	80200580
13	BEARING SEAL	73320315	37	PAPER SEAL	74429620	63	INTERMEDIATE SHAFT 3R	74429620
12	MAGNET RING	80701002	36	(3) NEEDLE SLEEVE	80420110	62	GEAR SWITCH	80420110
11	BEARING	80410021	35	(4) SCREW, 4.2 X 16	80201292	61	COUPLING BOLT	80201292
10	(2) SCREW	80201180	34	SAFETY RING	80201320	60	CLUSTER GEARS	80201320
9	(2) LOCK WASHER	80201385	33	BEARING	80410031	59	FITTING SPRING, HARDENED	80410031
8	DISK	73320999	32	SAFETY RING, 28/1.2	80201333	58	INTERMEDIATE SHAFT 2	80201333
7	BRUSH	80700040	31	END SHIELD	7152B610	57	COUPLING, COMPLETE	7152B610
6	WASHER	73320210	30	(4) SELF-TAPPING SCREW	80201294	56	C-CLIP	80201294
5	BRUSH HOLDER	80201199	29	SCREW	80201291	55	CLUTCH WASHER	80201291
4	AIR GUIDING RING	71540140	28	(2) SCREW, 4.2 X 16	80201271	54	WASHER	80201271
3	MOTOR HOUSING	100094	27	WIRE LOCKING FLANGE	71540330	53	WASHER	71540330
2	STATOR ASSEMBLY, 230V	74326150	26	CABLE	71323255	52	SPRING WASHER	71323255
2	STATOR ASSEMBLY, 120V	71528150	25	CONNECTING CABLE	80600060	51	INTERMEDIATE WHEEL 1	80600060
1	ROTOR ASSEMBLY, 230V	7154E100	24	SWITCH	80600114	50	GEAR SLEEVE	80600114
1	ROTOR ASSEMBLY, 120V	74321100	23	HANDLE HALVES	71527260	49	COUPLING WHEEL	71527260
ITEM NO.	**PART NAME**	**PART NUMBER**	**ITEM NO.**	**PART NAME**	**PART NUMBER**	**ITEM NO.**	**PART NAME**	**PART NUMBER**

FIGURE A-7. ELECTRIC MOTOR PARTS LIST (P/N EMT260510)



9	1	FILTER HOUSING	HS50-518				
	1	FILTER ASSEMBLY	HS50-507	19	1	FLOW CONTROL VALVE, OPTIONAL	211-1212
8	1	3/4" MALE - 1/2" NPT MALE REDUCER	HS50-531	18	1	3/4" MALE TO 1/2" NPT FEMALE REDUCER BUSHING	HS50-532
7	1	CAP O-RING	HS50-516	17	1	CLAW FITTING LOCK PIN	215-2012
6	1	CAP	HS50-515	16	1	CLAW FITTING RUBBER SEAL	215-2020
5	1	VALVE O-RING	HS50-514	15	1	CLAW COUPLER	215-1012
4	1	OILER VALVE	HS50-513	14	1	NUT O-RING	HS50-523
3	1	LUBRICATOR BODY	HS50-530	13	1	FILTER NUT	HS50-522
		LUBRICATOR ASSEMBLY	HS50-506	12	1	ELEMENT O-RING	HS50-521
2	1	QUICK DISCONNECT COUPLER	HS50-511	11	1	FILTER ELEMENT	HS50-520
1	1	1/2" HOSE WITH FITTINGS	HS50-510	10	1	SPRING	HS50-519
ITEM NO.	**QTY.**	**PART NAME**	**PART NUMBER**	**ITEM NO.**	**QTY.**	**PART NAME**	**PART NUMBER**

FIGURE A-8. IN-LINE OILER AND FLOW CONTROL ASSEMBLY (P/N HS50-508)

4	6	SPRING	MFT160461
3	1	5/32" T-HANDLE HEX KEY	MFT160466
2	1	15/16" COMBINATION WRENCH	MFT160465
1	1	FOLD UP KEY SET 5/64 - 1/4"	100093
ITEM NO.	QTY.	PART NAME	PART NUMBER

FIGURE A-9. TOOL KIT

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APPENDIX B SDS

SDS list

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SAFETY DATA SHEET

1. Identification

Product identifier **LPS® 1 (Aerosol)**

Other means of identification

Part Number 00116

Recommended use An industrial lubricant designed to displace moisture from mechanical and electrical equipment, provide light-duty lubrication and short-term rust prevention.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Manufacturer

Company name LPS Laboratories, a division of Illinois Tool Works, Inc.

Address 4647 Hugh Howell Rd.
Tucker, GA 30084

Country (U.S.A.)

Tel: +1 770-243-8800

In Case of Emergency 1-800-424-9300 (inside U.S.)
+001 703-527-3887 (outside U.S.)

Website www.lpslabs.com

E-mail sds@lpslabs.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
	Gases under pressure	Compressed gas
Health hazards	Skin corrosion/irritation	Category 2
	Sensitization, skin	Category 1B
	Specific target organ toxicity, single exposure	Category 3 narcotic effects

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Extremely flammable aerosol. Contains gas under pressure; may explode if heated. Causes skin irritation. May cause an allergic skin reaction. May cause drowsiness or dizziness.

Precautionary statement

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Pressurized container: Do not pierce or burn, even after use. Avoid breathing gas. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves.

Response If on skin: Wash with plenty of water. Take off contaminated clothing and wash before reuse. Specific treatment (see this label). If skin irritation or rash occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Distillates Petroleum, Hydroteated Light		64742-47-8	70 - 80
Distillates Petroleum Hydrotreated Med		64742-46-7	10 - 20
Carbon Dioxide		124-38-9	1 - 5
Sorbitan trioleate		26266-58-0	1 - 3
Calcium Sulfonate		61789-86-4	0.1 - 1

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion In the unlikely event of swallowing contact a physician or poison control center. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed May cause drowsiness and dizziness. Headache. Nausea, vomiting. Rash. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media Alcohol resistant foam. Water spray. Water fog. Dry chemical powder. Dry chemicals. Carbon dioxide (CO_2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical Contents under pressure. Pressurized container may explode when exposed to heat or flame. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Fire fighting equipment/instructions In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Cool containers exposed to heat with water spray and remove container, if no risk is involved. Containers should be cooled with water to prevent vapor pressure build up. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers exposed to flames with water until well after the fire is out. In the event of fire and/or explosion do not breathe fumes.

General fire hazards Extremely flammable aerosol. Contents under pressure. Pressurized container may explode when exposed to heat or flame.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing gas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. Use personal protection recommended in Section 8 of the SDS.

Methods and materials for containment and cleaning up

Refer to attached safety data sheets and/or instructions for use. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Use water spray to reduce vapors or divert vapor cloud drift. Isolate area until gas has dispersed. Dike far ahead of spill for later disposal. Scoop up used absorbent into drums or other appropriate container. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Do not re-use empty containers. Avoid breathing gas. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Level 1 Aerosol.

Store locked up. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. Store in original tightly closed container. Store in a well-ventilated place. Keep out of the reach of children. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

U.S. - OSHA

Components	Type	Value	Form
Distillates Petroleum, Hydroteated Light (CAS 64742-47-8)	PEL	5 mg/m3	Oil mist

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	PEL	9000 mg/m3 5000 ppm

ACGIH

Components	Type	Value	Form
Distillates Petroleum, Hydroteated Light (CAS 64742-47-8)	TWA	5 mg/m3	Oil mist

US. ACGIH Threshold Limit Values

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	STEL	30000 ppm
	TWA	5000 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	STEL	54000 mg/m3 30000 ppm
	TWA	9000 mg/m3 5000 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Chemical resistant gloves are recommended.
Other	Avoid contact with the skin. Wear appropriate chemical resistant clothing.
Respiratory protection	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Thermal hazards	Not applicable.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Liquid.
Physical state	Gas.
Form	Aerosol.
Color	Amber.
Odor	Characteristic.
Odor threshold	Not available.
pH	Not applicable
Melting point/freezing point	< -58 °F (< -50 °C)
Initial boiling point and boiling range	415.4 °F (213 °C)
Flash point	174.2 °F (79.0 °C) Tag Closed Cup (dispensed liquid)
Evaporation rate	< 0.1 (BuAc = 1)
Flammability (solid, gas)	Flammable gas.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	0.6 %
Flammability limit - upper (%)	7 %
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 0.05 mm Hg @ 20°C
Vapor density	> 1 (air = 1)
Relative density	0.79 - 0.81 @ 20°C
Solubility(ies)	
Solubility (water)	Not soluble
Partition coefficient (n-octanol/water)	< 1
Auto-ignition temperature	> 442.4 °F (> 228 °C)
Decomposition temperature	Not established
Viscosity	< 3.8 cSt @ 25°C
Other information	
Heat of combustion	Not established
Percent volatile	95 - 96 %
VOC (Weight %)	0.4 % per US State & Federal Consumer Product Regulations

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.

Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Oxidizing agents.
Hazardous decomposition products	Carbon oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Skin contact	Causes skin irritation. May cause an allergic skin reaction.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	May be fatal if swallowed and enters airways.
Symptoms related to the physical, chemical and toxicological characteristics	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. Exposure may cause temporary irritation, redness, or discomfort. Defatting of the skin. Rash. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Decrease in motor functions. Behavioral changes.

Information on toxicological effects

Acute toxicity Narcotic effects. May cause an allergic skin reaction.

Components	Species	Test Results
Calcium Sulfonate (CAS 61789-86-4)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg, 24 Hours
	Rat	> 2000 mg/kg, 24 Hours
Inhalation		
LC50	Rat	> 1.9 mg/l, 4 Hours
Oral		
LD50	Rat	10000 - 20000 mg/kg
Distillates Petroleum Hydrotreated Med (CAS 64742-46-7)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg, 24 Hours
Inhalation		
LC50	Rat	7640 mg/m3, 4 Hours
		1.72 mg/l, 4 Hours
Distillates Petroleum, Hydroteated Light (CAS 64742-47-8)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
		> 2000 mg/kg, 24 Hours
Inhalation		
LC50	Cat	> 6.4 mg/l, 6 Hours
	Rat	> 7.5 mg/l, 6 Hours
		> 4.3 mg/l, 4 Hours
		> 0.1 mg/l, 8 Hours
Oral		
LD50	Rat	> 5000 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Narcotic effects.

Specific target organ toxicity - repeated exposure Based on available data, the classification criteria are not met.

Aspiration hazard Not likely, due to the form of the product.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects.

Components		Species	Test Results
Distillates Petroleum, Hydroteated Light (CAS 64742-47-8)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	2.9 mg/l, 96 hours

Persistence and degradability Not inherently biodegradable.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

LPS® 1 (Aerosol) < 1

Mobility in soil No data available.

Other adverse effects None known.

13. Disposal considerations

Disposal instructions Consult authorities before disposal. Contents under pressure. Do not puncture, incinerate or crush. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D003: Waste Reactive material

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport information

DOT

UN number UN1950

UN proper shipping name Aerosols, flammable

Transport hazard class(es)

Class 2.1

Subsidiary risk -

Label(s) 2.1

Packing group Not applicable.

Environmental hazards

Marine pollutant No

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisions N82

Packaging exceptions 306

Packaging non bulk	None
Packaging bulk	None

IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	No
ERG Code	10L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS, Flammable
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No
EmS	F-D, S-U
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code This substance/mixture is not intended to be transported in bulk.

DOT

IATA; IMDG

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - Yes
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical

Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Carbon Dioxide (CAS 124-38-9)

US. New Jersey Worker and Community Right-to-Know Act

Carbon Dioxide (CAS 124-38-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Carbon Dioxide (CAS 124-38-9)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 10-01-2014

Version # 01

Disclaimer LPS Laboratories cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

1. Identification

Product identifier **LPS® 2 (Aerosol)**

Other means of identification

Part Number 00216

Recommended use An industrial lubricant designed to displace moisture from equipment, provide heavy-duty lubrication and rust prevention.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Manufacturer

Company name LPS Laboratories, a division of Illinois Tool Works, Inc.

Address 4647 Hugh Howell Rd.
Tucker, GA 30084

Country (U.S.A.)
Tel: +1 770-243-8800

In Case of Emergency 1-800-424-9300 (inside U.S.)
+001 703-527-3887 (outside U.S.)

Website www.lpslabs.com

E-mail sds@lpslabs.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
	Gases under pressure	Compressed gas
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 narcotic effects

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Extremely flammable aerosol. Contains gas under pressure; may explode if heated. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness.

Precautionary statement

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Pressurized container: Do not pierce or burn, even after use. Avoid breathing gas. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves. Wear eye/face protection.

Response If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor if you feel unwell. Specific treatment (see this label). If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Distillates Petroleum, Hydroteated Light		64742-47-8	70 - 80
Petroleum Oil		64742-52-5	10 - 20
Carbon Dioxide		124-38-9	1 - 5

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed Dermatitis. Rash. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Call a POISON CENTER or doctor/physician if you feel unwell.

5. Fire-fighting measures

Suitable extinguishing media Powder. Alcohol resistant foam. Water. Water spray. Dry chemicals. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical Contents under pressure. Pressurized container may explode when exposed to heat or flame.

Special protective equipment and precautions for firefighters Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Fire fighting equipment/instructions In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Cool containers exposed to heat with water spray and remove container, if no risk is involved. Containers should be cooled with water to prevent vapor pressure build up. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers exposed to flames with water until well after the fire is out. In the event of fire and/or explosion do not breathe fumes.

General fire hazards Extremely flammable aerosol.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. Use personal protection recommended in Section 8 of the SDS.

Methods and materials for containment and cleaning up Refer to attached safety data sheets and/or instructions for use. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Isolate area until gas has dispersed. Use water spray to reduce vapors or divert vapor cloud drift. Scoop up used absorbent into drums or other appropriate container. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. All equipment used when handling the product must be grounded. Do not re-use empty containers. Avoid prolonged or repeated contact with skin. Avoid prolonged exposure. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Level 3 Aerosol.

Store locked up. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

U.S. - OSHA

Components	Type	Value	Form
Distillates Petroleum, Hydroteated Light (CAS 64742-47-8)	PEL	5 mg/m3	Oil mist
Petroleum Oil (CAS 64742-52-5)	PEL	5 mg/m3	Oil mist

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	PEL	9000 mg/m3
		5000 ppm

ACGIH

Components	Type	Value	Form
Distillates Petroleum, Hydroteated Light (CAS 64742-47-8)	TWA	5 mg/m3	Oil mist
Petroleum Oil (CAS 64742-52-5)	TWA	5 mg/m3	Oil mist

US. ACGIH Threshold Limit Values

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	STEL	30000 ppm
	TWA	5000 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	STEL	54000 mg/m3
		30000 ppm
	TWA	9000 mg/m3
		5000 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection	
Hand protection	Chemical resistant gloves are recommended.
Other	Wear suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Not applicable.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Liquid.
Physical state	Gas.
Form	Aerosol.
Color	Brown
Odor	Slight petroleum odor, Cherry
Odor threshold	Not established
pH	Not applicable
Melting point/freezing point	< -58 °F (< -50 °C)
Initial boiling point and boiling range	383 °F (195 °C) @ 101 kPa
Flash point	174.2 °F (79.0 °C) Tag Closed Cup (dispensed liquid)
Evaporation rate	< 0.1 BuAc
Flammability (solid, gas)	Flammable gas.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	0.6 %
Flammability limit - upper (%)	7 %
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 0.05 mm Hg @ 20ºC (dispensed liquid)
Vapor density	4.7 (air = 1)
Relative density	Not available.
Solubility(ies)	
Solubility (water)	< 3 %
Partition coefficient (n-octanol/water)	< 1
Auto-ignition temperature	> 442.4 °F (> 228 °C)
Decomposition temperature	Not established
Viscosity	< 7 cSt
Viscosity temperature	77 °F (25 °C)
Other information	
Heat of combustion	> 30 kJ/g
Percent volatile	92 - 95 %
Specific gravity	0.82 - 0.86 @ 20°C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Carbon oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	May cause discomfort if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Irritating to eyes, respiratory system and skin. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Exposure may cause temporary irritation, redness, or discomfort. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Information on toxicological effects

Acute toxicity Narcotic effects.

Components	Species	Test Results
Distillates Petroleum, Hydroteated Light (CAS 64742-47-8)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
		> 2000 mg/kg, 24 Hours
Inhalation		
LC50	Cat	> 6.4 mg/l, 6 Hours
	Rat	> 7.5 mg/l, 6 Hours
		> 4.3 mg/l, 4 Hours
		> 0.1 mg/l, 8 Hours
Oral		
LD50	Rat	> 5000 mg/kg
Petroleum Oil (CAS 64742-52-5)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
		> 2000 mg/kg, 24 Hours
Inhalation		
LC50	Rat	2.18 mg/l, 4 Hours
Oral		
LD50	Rat	5000 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Narcotic effects.

Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Not likely, due to the form of the product.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
Distillates Petroleum, Hydroteated Light (CAS 64742-47-8)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	2.9 mg/l, 96 hours

Persistence and degradability	Not inherently biodegradable.
Bioaccumulative potential	Not available.
Partition coefficient n-octanol / water (log Kow) LPS® 2 (Aerosol)	< 1
Mobility in soil	No data available.
Other adverse effects	None known.

13. Disposal considerations

Disposal instructions	Consult authorities before disposal. Contents under pressure. Do not puncture, incinerate or crush. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D003: Waste Reactive material
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport information

DOT

UN number	UN1950
UN proper shipping name	Aerosols, flammable
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Packaging exceptions	306
Packaging non bulk	None
Packaging bulk	None

IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Environmental hazards	No.
ERG Code	10L

Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS, flammable
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No
EmS	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

DOT

IATA; IMDG

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - Yes
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)
Not listed.

US. Massachusetts RTK - Substance List
Carbon Dioxide (CAS 124-38-9)

US. New Jersey Worker and Community Right-to-Know Act
Carbon Dioxide (CAS 124-38-9)

US. Pennsylvania Worker and Community Right-to-Know Law
Carbon Dioxide (CAS 124-38-9)

US. Rhode Island RTK
Not regulated.

US. California Proposition 65
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 09-22-2014

Version # 01

Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Revision Information	Product and Company Identification: Product Uses Composition / Information on Ingredients: Ingredients Physical & Chemical Properties: Multiple Properties Ecological Information: Ecotox Property Data Transport Information: Proper Shipping Name/Packing Group Regulatory Information: United States HazReg Data: North America GHS: Classification

Product Name: MOBIL ALMO 525
Revision Date: 19Jul2007

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **MOBIL ALMO 525**
Product Description: Base Oil and Additives
Product Code: 603183-00, 970924
Intended Use: Lubricant

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
MSDS Requests	713-613-3661
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material may be considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

This product may be used in certain applications where misting can occur. Excessive exposure to liquids and mists may cause skin and eye irritation. In addition, excessive exposure to mists may cause respiratory irritation and damage and aggravate pre-existing emphysema or asthma. Low order of toxicity. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use

adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. 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.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Pressurized mists may form a flammable mixture.

Hazardous Combustion Products: Aldehydes, Oxides of carbon, Smoke, Fume, Sulfur oxides, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >188C (370F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry

creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapors. Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use

with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:
Particulate air-purifying respirator approved for dust / oil mist is recommended.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly affect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended. Chemical type goggles should be worn during misting operations.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS
See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION
Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION
Relative Density (at 15 C): 0.883
Flash Point [Method]: >188C (370F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): > 2 at 101 kPa

Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 46 cSt (46 mm2/sec) at 40 C | 7.3 cSt (7.3 mm2/sec) at 100C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -24°C (-11°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:

Oil Mist (highly refined oils): Animals exposed to high concentrations of mist developed oil retention, inflammation, and oil granulomas in the respiratory tract. Oils exposed to high temperatures, cracking conditions, or mixing with tramp / used oils may introduce polycyclic aromatic compounds or microbial contaminants that could result in cancer or severe respiratory hazards.
Contains:
Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY
Material -- Not expected to be harmful to aquatic organisms.

MOBILITY
Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY
Biodegradation:
Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL
Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS
Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

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 as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, 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.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: Under some use conditions, this material may be considered to be hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: TSCA

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
CHLORINE (ELEMENTAL ANALYSIS)	7782-50-5	1, 4
PHOSPHORODITHOIC ACID, O,O-DI C1-14-ALKYL ESTERS, ZINC SALTS (2:1) (ZDDP)	68649-42-3	15

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 13: Empty Container Warning was modified.
Section 09: Boiling Point C(F) was modified.
Section 08: Hand Protection was modified.
Section 09: Vapor Pressure was modified.
Section 11: Inhalation Lethality Test Data was modified.
Section 06: Accidental Release - Spill Management - Water was modified.
Section 09: Relative Density - Header was modified.
Section 09: Flash Point C(F) was modified.
Section 09: Viscosity was modified.
Section 09: Viscosity was modified.
Section 08: Respiratory Protection was modified.
Section 15: SARA (313) TOXIC RELEASE INVENTORY - Header was modified.
Section 15: National Chemical Inventory Listing was modified.
Section 06: Notification Procedures was modified.
Section 12: Bioaccumulation - Header was added.
Section 12: Ecological Information - Bioaccumulation was added.
Section 12: Ecological Information - Bioaccumulation was added.
Section 15: SARA (313) TOXIC RELEASE INVENTORY - Table was deleted.
Section 15: SARA 313 - Chemical Name - Header was deleted.
Section 15: SARA 313 - CAS Number - Header was deleted.
Section 15: SARA313 - Typical Value - Header was deleted.

PRECAUTIONARY LABEL TEXT:
Caution! Excessive exposure to mist may cause skin and eye irritation. In addition, excessive exposure to mist may cause respiratory irritation and damage, and aggravate pre-existing emphysema and asthma. Use with adequate ventilation. If inhaled and symptoms develop, remove to fresh air and get medical attention.

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affiliates in which they directly or indirectly hold any interest.

Internal Use Only

MHC: 0, 0, 0, 0, 0, 1 PPEC: A

DGN: 2008031XUS (545270)

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name:	Omniguard
MSDS Number:	778589
Intended Use:	Lubricating Grease

COMPANY INDENTIFICATION

Supplier	Nook Industries 4950 East 49th Street Cleveland, Oh 44125
24 Health Emergency:	Chemtrec: 800-424-9300 (24 Hours)
MSDS Requests`	800-321-7800
MSDS Internet Address	http://www.nookindustries.com/r/msds

SECTION 2 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: Tan
Physical Form: Semi-Solid
Odor: Petroleum

POTENTIAL HEALTH EFFECTS

Eye: Eye irritant. Contact may cause stinging, watering, redness, and swelling.
Skin: Contact may cause mild skin irritation including redness and a burning sensation. Repeated exposure may cause skin dryness or cracking. No information available on skin absorption.
Inhalation (Breathing): No information available on acute toxicity. Inhalation is not an expected route of exposure.
Ingestion (Swallowing): Low degree of toxicity by 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 eye disorders and skin disorders.

See Section 11 for additional Toxicity Information.

SECITION 3 COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CASRN	CONCENTRATION[1]
Lubricant Base Oil (Petroleum)	VARIOUS	50 - 80
Additives	PROPRIETARY	15 - 40
Calcium Dodecylbenzenesulfonate	26264-06-2	1 - 3

[1] All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST AID MEASURES

Eye Contact: For direct contact, remove contact lenses if present and easy to do. Immediately hold eyelids apart and flush the affected eye(s) with clean water for at least 15 minutes. Seek immediate 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): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek medical attention.

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

Notes to Physician: 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.

SECTION 5 FIRE-FIGHTING MEASURES

NFPA 704 Hazard Class

Health:	1
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

SECTION 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 larges 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: If spill/release in excess of EPA reportable quantity (see Section 15) is made into the environment, immediately notify the National Response Center (phone number 800-424-8802). 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.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling: Keep away from flames and hot surfaces. Wear eye/face protection. 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.

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.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

COMPONENT	US-ACGIH	OSHA	OTHER
Lubricant Base Oil (Petroleum)	TWA: 5mg/m^3 STEL: 10 mg/m^3 as Oil Mist, if generated	TWA: 5 mg/m^3 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: Respiratory protection is not normally required under intended conditions of use. Emergencies or conditions that could result in significant airborne exposures may require the use of NIOSH approved respiratory protection. An industrial hygienist or other appropriate health and safety professional should be consulted for specific guidance under these situations.

Other Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse.

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.

SECTION 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:	Tan
Physical Form:	Semi-Solid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<0.1 mm Hg
Vapor Density (air=1):	> 5
Initial Boiling Point/Range:	No data
Melting/Freezing Point:	No data
Solubility in Water:	Insoluble
Solubility in Other Solvents:	Soluble
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity (water=1):	0.9943 @ 60°F (15.6°C)
Bulk Density:	8.29 lbs/gal

Evaporation Rate (nBuAc=1):	<1
Flash Point:	464°F / 240°C
Test Method:	Cleveland Open Cup (COC), ASTM D92
Lower Explosive Limits (vol % in air):	No data
Upper Explosive Limits (vol % in air):	No data
Auto-ignition Temperature:	No data

SECTION 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.

SECTION 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.

ACUTE TOXICITY:

COMPONENT	ORAL LD50	DERMAL LD50	INHALATION LC50
Lubricant Base Oil (Petroleum)	> 5 g/kg	> 2 g/kg	> 5 mg/L
Calcium Dodecylbenzenesulfonate	1,300 mg/kg	No data	No data

SECTION 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. However, there is insufficient information available on the toxicity of the thickening agents used in greases. Should therefore be regarded as capable of causing long term adverse effects in the aquatic environment.

Mobility: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material.

Components may behave differently in the aquatic environment with soaps dispersing and dissolving to some extent in water while the hydrocarbons will float on the surface due to their low water solubility. The hydrocarbon portion would be expected to show low mobility in soil and water. The major environmental fate would be expected to be biodegradion.

Persistence and degradability: The base oil constituents of greases are expected to be inherently, but no readily biodegradable.

Some of the thickening agents may be readily 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.

SECTION 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.

SECTION 14 TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

Shipping Description: Not regulated

NOTE: 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: Not regulated

NOTE: 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 #: Not regulated

NOTE: 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:			

SECTION 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:	Yes
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

COMPONENT	RQ
Calcium Dodecylbenzenesulfonate	1000 lb

CALIFORNIA PROPOSITION 65

WARNING: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

COMPONENT	TYPE OF TOXICITY
1-Naphthylamine	Cancer
2-Naphthylamine	Cancer

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 D2B

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

SECTION 16 OTHER INFORMATION

Date of Issue:	06-Aug-2010
Status:	**FINAL**
Previous Issue Date:	27-Aug-2007
MSDS Number:	778589

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)

Material Safety Data Sheet

1 - Chemical Product and Company Identification

Manufacturer: WD-40 Company **Address: 1061 Cudahy Place (92110)** **P.O. Box 80607** **San Diego, California, USA** **92138 –0607** **Telephone:** **Emergency only: 1-888-324-7596 (PROSAR)** **Information: 1-888-324-7596** **Chemical Spills: 1-800-424-9300 (Chemtrec)** **1-703-527-3887 (International Calls)**	**Chemical Name: Organic Mixture** **Trade Name: WD-40 Aerosol** **Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion** **MSDS Date Of Preparation: 6/8/12**

2 – Hazards Identification

Emergency Overview:
DANGER! Flammable aerosol. Contents under pressure. Harmful or fatal if swallowed. If swallowed, may be aspirated and cause lung damage. May cause eye irritation. Avoid eye contact. Use with adequate ventilation. Keep away from heat, sparks and all other sources of ignition.

Symptoms of Overexposure:
Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.
Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.
Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.
Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.
Chronic Effects: None expected.
Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory conditions may be aggravated by exposure.

Suspected Cancer Agent:
Yes No X

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent
Aliphatic Hydrocarbon	64742-47-8	45-50
Petroleum Base Oil	64742-58-1 64742-53-6 64742-56-9 64742-65-0	<25
LVP Aliphatic Hydrocarbon	64742-47-8	12-18
Carbon Dioxide	124-38-9	2-3
Non-Hazardous Ingredients	Mixture	<10

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.
Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.
Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.

Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.

5 – Fire Fighting Measures

Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.
Special Fire Fighting Procedures: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.
Unusual Fire and Explosion Hazards: Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

6 – Accidental Release Measures

Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area. Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.
Storage: Store in a cool, well-ventilated area, away from incompatible materials. Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m3 TWA, 10 mg/m3 STEL ACGIH TLV 5 mg/m3 TWA OSHA PEL
LVP Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Carbon Dioxide	5000 ppm TWA (OSHA/ACGIH), 30,000 ppm STEL (ACGIH)
Non-Hazardous Ingredients	None Established

The Following Controls are Recommended for Normal Consumer Use of this Product
Engineering Controls: Use in a well-ventilated area.
Personal Protection:
Eye Protection: Avoid eye contact. Always spray away from your face.
Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.
Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended
Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.
Personal Protection:
Eye Protection: Safety goggles recommended where eye contact is possible.

Skin Protection: Wear chemical resistant gloves.
Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.
Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Boiling Point:	361 - 369°F (183 - 187°C)	Specific Gravity:	0.8 – 0.82 @ 60°F
Solubility in Water:	Insoluble	pH:	Not Applicable
Vapor Pressure:	95-115 PSI @ 70°F	Vapor Density:	Greater than 1
Percent Volatile:	70-75%	VOC:	412 grams/liter (49.5%)
Coefficient of Water/Oil Distribution:	Not Determined	Appearance/Odor	Light amber liquid/mild odor
Flash Point:	122°F (49°C) Tag Open Cup (concentrate)	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8.0%
Pour Point:	-63°C (-81.4°F) ASTM D-97	Kinematic Viscosity:	2.79-2.96cSt @ 100°F

10 – Stability and Reactivity

Stability: Stable
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.
Incompatibilities: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

The oral toxicity of this product is estimated to be greater than 5,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.
None of the components of this product is listed as a carcinogen or suspected carcinogen or is considered a reproductive hazard.

12 – Ecological Information

No data is currently available.

13 - Disposal Considerations

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Dispose in accordance with federal, state, and local regulations.

14 – Transportation Information_

DOT Surface Shipping Description: Consumer Commodity, ORM-D
After 1/1/2014 UN1950, Aerosols, 2.1 Ltd. Qty (Note: Shipping Papers are not required for Limited Quantities unless transported by air or vessel – each package must be marked with the Limited Quantity Mark)
IMDG Shipping Description: UN1950, Aerosols, 2.1, LTD QTY
ICAO Shipping Description: UN1950, Aerosols, flammable, 2.1 NOTE: WD-40 does not test aerosol cans to assure that they meet the pressure and other requirements for transport by air. We do not recommend that our aerosol products be transported by air.

15 – Regulatory Information

U.S. Federal Regulations:
CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.
SARA TITLE III:
Hazard Category For Section 311/312: Acute Health, Fire Hazard, Sudden Release of Pressure
Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None
Section 302 Extremely Hazardous Substances (TPQ): None
EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory.
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): This product does not contain chemicals regulated under California Proposition 65.
VOC Regulations: This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.
Canadian Environmental Protection Act: One of the components is listed on the NDSL. All of the other ingredients are listed on the Canadian Domestic Substances List or exempt from notification.
Canadian WHMIS Classification: Class B-5 (Flammable Aerosol)
This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

16 – Other Information:

HMIS Hazard Rating:
Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Reactivity – 0 (minimal hazard)

SIGNATURE: _____ TITLE: Adm. Scientific Manager

REVISION DATE: June 2012 SUPERSEDES: March 2010

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **MOBILGEAR 600 XP 150**
Product Description: Base Oil and Additives
Product Code: 201560401215, 613620-00, 97AE98
Intended Use: Gear oil

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
22777 Springwoods Village Parkway
Spring, TX. 77389 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300 or 703-527-3887 CHEMTREC
Product Technical Information	800-662-4525
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1910.1200.

PHYSICAL / CHEMICAL HAZARDS
No significant hazards.

HEALTH HAZARDS
High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS
No significant hazards.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

ExxonMobil

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
LONG-CHAIN ALKYL AMINE		0.1 - < 0.25%	H302, H311, H317, H330(2), H314(1B), H373, H400(M factor 1), H410(M factor 1)

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. 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.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Oxides of carbon, Aldehydes, Sulfur oxides, Smoke, Fume, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200°C (392°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:
No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.888
Flammability (Solid, Gas): N/A
Flash Point [Method]: >200°C (392°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316°C (600°F)
Decomposition Temperature: N/D
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C

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Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 150 cSt (150 mm2/sec) at 40 °C | 14.7 cSt (14.7 mm2/sec) at 100°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -9°C (16°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.

Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

For the product itself:

Repeated and/or prolonged exposure may cause irritation to the skin, eyes, or respiratory tract.
Contains:
Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

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 as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, 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.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, KECI, PICCS, TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H302: Harmful if swallowed; Acute Tox Oral, Cat 4
H311: Toxic in contact with skin; Acute Tox Dermal, Cat 3
H314(1B): Causes severe skin burns and eye damage; Skin Corr/Irritation, Cat 1B
H317: May cause allergic skin reaction; Skin Sensitization, Cat 1
H330(2): Fatal if inhaled; Acute Tox Inh, Cat 2
H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.

ExxonMobil

Product Name: MOBILGEAR 600 XP 150
Revision Date: 20 Mar 2015

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