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## Standard Lubrication Specification

Note: This is a standard specification. Not all sections may be applicable. Brands and grades are recommended for all applications, but no guarantees are made as to the availability of products. Please contact Hause Machines if product substitutions are intended.

Refer to the last page for any revisions.

<b>Application</b>	<b>Lubricant</b>	<b>Frequency</b>	<b>Notes</b>
<b>I. Holomatic® drive bearings</b>	1. NLGI #2 grease	Regrease every 2000 hours for extended life.	Lube for life conrad type sealed ball bearings.
<b>II. Holomatic® drive spline</b>	1. NLGI #2 grease	Every 1000 hours	
<b>III. Holomatic® boring spindle bearings</b>	1. BP Bearing Guard #2 grease	Every 500 hours	Angular contact bearings
<b>IV. Holomatic® spindle bearings</b>	1. NLGI #2 grease	Regrease every 2000 hours for extended life.	Lube for life conrad type sealed ball bearings.
<b>V. Holomatic® boring quill ref. 22159-00 assemblies</b>	1. Mobil DTE-24	Continuous – do not run dry	
<b>VI. Holomatic® boring spindles to 3600 RPM</b>	1. NLGI #000 grease	Every 100 hours	
<b>VII. Holomatic® boring spindles above 3600 RPM</b>	1. Mobil Velocite oil #6 2. Energol HLP/C10 10 to 15 weight oil	Continuous – use oil mist.	
<b>VIII. Holomatic® lead screws and nuts</b>	1. BP Energol HLP-32 2. Mobil DTE-24	Continuous – do not run dry	
<b>IX. Ballscrew Holomatic® ballscrew</b>	1. BP Energol HP-68-C hydraulic slide and way oil.	Continuous – do not run dry	
<b>X. Multiple spindle heads with ball bearing construction and oil splash lubrication</b>	2. BP Gearep 80/90 gear oil	Continuous – maintain sight gage level	Change oil every 1000 hours, or as required.
<b>XI. Multiple spindle heads with ball bearing construction and non-oil splash</b>	1. NLGI #000 grease 2. #1500 Lubriplate Semi-Fluid Grease	Continuous	Change grease every 1000 hours
<b>XII. Multiple spindle heads with needle bearing construction and oil splash lubrication</b>	1. BP HLP-68 anti-wear oil	Maintain sight level - change every 1000 hours.	For high-speed applications.
<b>XIII. Multiple spindle head guide bars</b>	1. NLGI #2 grease 2. #1500 Lubriplate grease	Weekly	

<b>Application</b>	<b>Lubricant</b>	<b>Frequency</b>	<b>Notes</b>
<b>XIV. Automatic lubrication system (oil)</b>	1. BP Energol HP-68-C hydraulic slide and way oil.	Governed by components connected to the system.	Typical components connected to this system are: 1. Holomatic boring spindle quills 2. Holomatic Ballscrew Units 3. Holomatic Leadscrews 4. Holomatic feed back quills 5. Squareway slides
<b>XV. Automatic lubrication system (grease)</b>	1. Mobil Mobilux EP-1 Grease	Governed by components connects to the system.	Typical components connected to this system are: 1. Guide bar lugs on unit brackets and multiple spindle heads 2. Boring spindle bearings 3. Boring quill bearings 4. Linear ball systems 5. Right angle mill bearings and gears
<b>XVI. Automatic lubrication system (mist)</b>	1. Mobil Velocite oil #6 2. Energol HLP/C10 10 to 15 weight viscosity	Governed by components connected to the system.	This system used for components that cannot be reliably lubricated with conventional means and for high-speed spindles. 1. Vertical necking units. 2. Boring spindles > 3600 RPM
<b>XVII. Hydraulic power supply system</b>	1. BP Energol HLP-32 2. Mobil DTE-24 3. Industro-44 Must have anti-wear characteristics.	NA	Almost all hydraulic components are lubricated by the internal hydraulic fluid.
<b>XVIII. Electric motors</b>	1. NLGI #2 grade grease	Sealed bearings are greased at factory for normal operating conditions on motors from 1 to 7-1/2 HP running at 1800 RPM or less. Relubricate every 10,000 hours. For motors running above 1800 RPM, grease every 2000 hours.	

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XIX. <b>Ballscrews</b> – because of the need to handle sliding as well as rolling friction at high contact stresses, a lubricant must be introduced which separates the ball from the raceways. Lubricant film strength is a dominant factor in determining life.	1. VV-L-800 Oil: Vactra #4; Amoco Waytac #95 2. MIL-G-23827 Grease: Aeroshell #7; Amoco A-72832 3. MIL-G-81322 Grease: Mobil Grease #28; Aeroshell #22	Frequency of lubrication depends on the duty cycle. Even though the ballscrews are greater than 90% efficient, the 10% inefficiency must be considered if the unit is operating at high speed. Inefficiency of continuous high-speed operations is reflected in the heat generated. If heat generated is great enough, the ball screw or surrounding components may expand and cause dimensional inaccuracies. In such a case, a constant supply of lubricant is required to carry heat away. A supplementary air jet may also be needed. On the other hand, a clean environment with intermittent operation may allow the use of grease packing only.	If possible, it is best to establish a frequency of lubrication based on experience gained from similar applications or under laboratory test. A good place to start would be to evaluate lubrication needs after 50 to 100 hours of ballscrew operation.
XX. <b>Part centering slide with electro-mechanical feed module assembly.</b>	1. BP Energol HP-68-C hydraulic slide and way oil.	Every part changeover or every 500 hours.	Lubricate slide and acme screw nut.
XXI. <b>Air cylinders and valves</b>	1. Lubricated air with BP Energol HLP-32	Continuous – approximately 1 oz. per 1000 cycles.	Adjust according to manufacturer instructions.
XXII. <b>Riser adjusting screw</b>	1. NLGI #2 grease	Before each use or every 2000 hours	
XXIII. <b>Slide ways</b>	1. BP Energol HP-60-C way oil	Maintain a constant supply	
XXIV. <b>Index tables</b>	1. NLGI #2 grease	Weekly	
XXV. <b>Autocentric® Vise ballscrew</b>	1. See recommendation for ballscrews	Continuous	
XXVI. <b>Autocentric® Vise</b>	1. NLGI #2 Grease	Every 2000 hours to extend life.	Conrad bearings are lubed for life.
XXVII. <b>Linear Ball Bearing Slides</b>	1. ISO Grade 68 Oil 2. NLGI #2 Grease	Weekly or before startup	Adjust according to use.

#### REVISIONS

LET	DESCRIPTION	BY / DATE	APP'D / DATE
A	ADDED OIL MIST SPECIFICATION	JP / 5-8-95	JH / 5-8-95
B	ADDED BALL SCREW SPECIFICATION	JP / 1-8-98	MM / 1-8-98

