ROTTLER

EM69P CNC 5 AXIS DIGITIZING & PORTING MACHINE MAINTENANCE AND PARTS MANUAL

PARTS ORDERING

For optional equipment catalogs, please visit https://www.rottlermfg.com/documentation.php

For fastest service ordering parts or equipment, contact us via e-mail with the information below. For customers within the U.S., send emails to parts@rottlermfg.com, for customers outside of the U.S., use intlparts@rottlermfg.com

Have the following information on hand to expedite the ordering process:

1. Your name, business name, and contact number
2. Customer number, or your billing address if you do not have a customer number
3. Shipping address if different from the billing address
4. Machine model and serial number
5. Part number and description of the item(s) to order
6. Preferred method of shipment

For customers outside of the U.S. requiring faster service, contact your local distributor.

In some cases, you may be requested to send a photo of the part you are ordering if it is a replacement part or does not appear in our database.

If you are unsure which part you need to order, contact our service department, and ask to speak to one of our service consultants. They will assist you in determining which part(s) you require.

THERE IS A MINIMUM ORDER OF $25.00

MANUAL SECTIONS

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MAINTENANCE

TROUBLESHOOTING

MACHINE PARTS

SDS

INTRODUCTION

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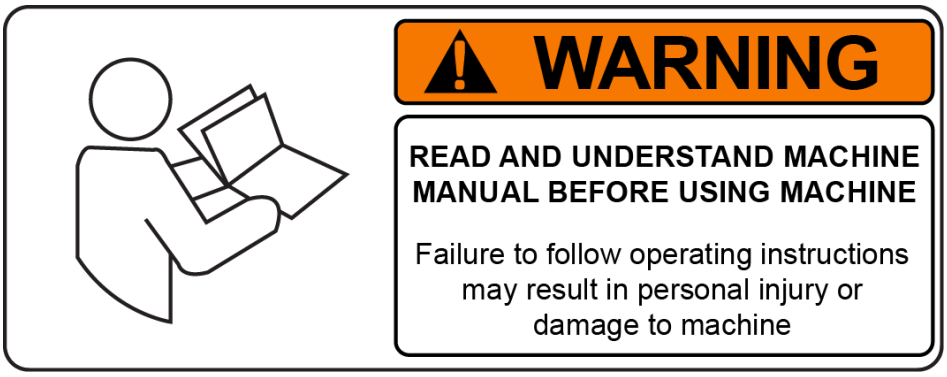
Introduction



READ THE SAFETY CHAPTER BEFORE INSTALLING MACHINE. THOROUGHLY UNDERSTAND ALL SAFETY ISSUES BEFORE OPERATING MACHINE.

ATTENTION OWNER/BUSINESS MANAGER

To validate the warranty on your new Rottler machine, please be sure to sign and complete the "Installation Report" located in the Installation Chapter of this manual.

We suggest that the new user of the EM69P read the CONTROL DEFINITIONS to get an idea how the machine operates.

The Operating Instructions chapter should be read in order to familiarize the user with the actual button pushing sequences required to carry out a job. These chapters in the manual should be considered an introduction. As the operators of the EM69P series machines gain experience with using the different functions of the machine, complicated setups and programs will make more sense.

The rest of the manual contains information and part number reference on fixtures, cutting tools, and machine maintenance. The operator should read and become familiar with these areas as well.

Description

The Rottler EM69P is a 5-axis CNC machine designed and developed specially for porting cylinder heads. The design of the machine allows the center of the “ball shaped” cutting tool to rotate about its own center on the 5th axis.

This unique design has many benefits to a performance engine builder of which the most important are ease of programming and the fastest and most accurate method to port cylinder heads.

Disclaimer

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Rottler Manufacturing and its employees or representatives are not responsible for any information regarding final specifications of any workpiece that is created as a final product when using Rottler equipment. It is the responsibility of the end user of Rottler equipment to determine the final dimensions and finishes of the workpiece that they are working on. Any information regarding final dimensions and finishes that appears in any Rottler literature or that is expressed by anyone representing Rottler is to be regarded as general information to help with the demonstration of or for operator training of Rottler equipment.

Limited Warranty

Rottler Manufacturing Company Model EM69P parts and equipment is warranted as to materials and workmanship. This limited warranty remains in effect for one year from the date of installation or two years from the date of the original shipment from Rottler or whichever date occurs first. This only applies is the machine is owned and operated by the original purchaser and is operated and maintained as per the instructions in the manual. A machine is warranted only if the Installation Report has been properly executed by a certified installation person and received by Rottler at the time of actual installation.

The products are warranted upon delivery to conform to their published specifications and to be free from defects in material and workmanship under normal use for a period of one year from shipment. Should a product not be as warranted, Rottler sole obligation shall be, at its option, to repair, correct or replace the

product or to refund the amounts paid for the Product upon its return to a location designated by Rottler. No warranty shall extend to rapid wear Products (including tooling) or to Products which have been subject to misuse (including any use contrary to Rottler instructions), neglect, accident (including during shipment), improper handling or installation, or subject to any modification, repair or service not certified by Rottler. Rottler shall not be liable for any consequential, direct or indirect damages or for any other injury or loss. Buyer waives any right, beyond the foregoing warranty, to make a claim against Rottler. No warranty is provided for any Products not paid in full.

Merchandise cannot be returned to Rottler without prior approval. Customer must contact the Parts Department to get approval and to be issued a Return Goods Authorization number **(RGR#).** Merchandise authorized for return must be returned prepaid. If merchandise is returned with shipping charges collect, the actual amount of these charges may be deducted from any credit which may be due the customer. The **RGR #** assigned by the Parts Department should be written on the shipping label and must appear on a copy of the invoice(s) covering the original shipment. This invoice copy must be included in the box with the parts. Shipment must contain ONLY those items on the **RGR** as approved for return. Merchandise must be received within 10 days of the date of **RGR** or the **RGR** will be canceled. All returned merchandise may be subject to a 20% restocking fee on under $1,000.00 amount or 10% on any items over $1,000.00. Parts or tooling over 30 days old are considered as customer property and can only be returned with prior approval from Rottler Corporation Management.

The issuance of a **RGR DOES NOT** guarantee credit - it is only authorization for the return of the goods. Credit for return merchandise is at the sole discretion of Rottler. Credit will be issued only after inspection of returned goods.

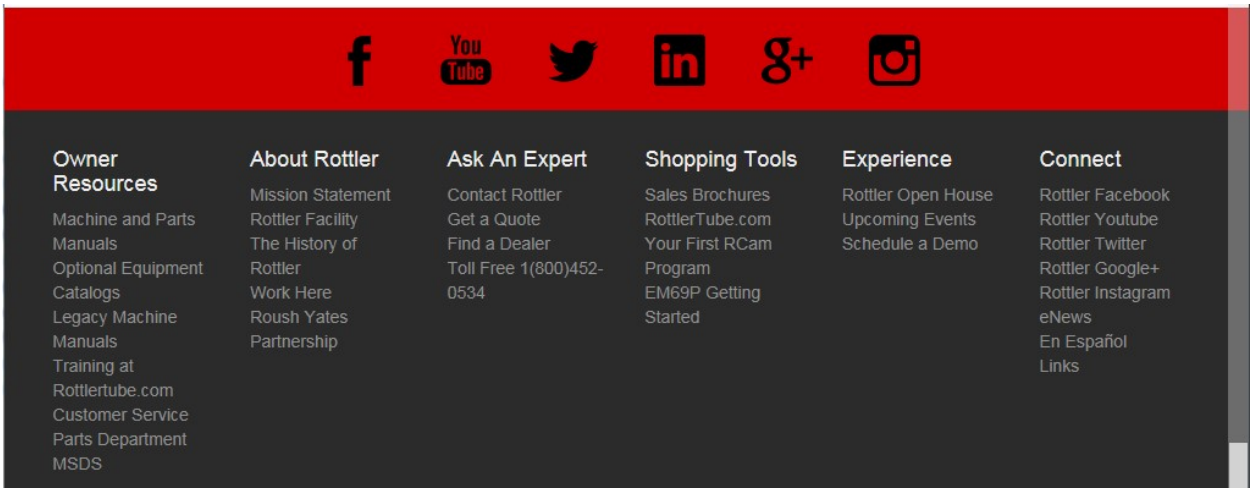
Tools proven to be defective within the warranty period will be repaired or replaced at the factory’s option.

We accept no responsibility for defects caused by external damage, wear, abuse, or misuse, nor do we accept any obligation to provide compensation for direct or indirect costs in connection with cases covered by the warranty.

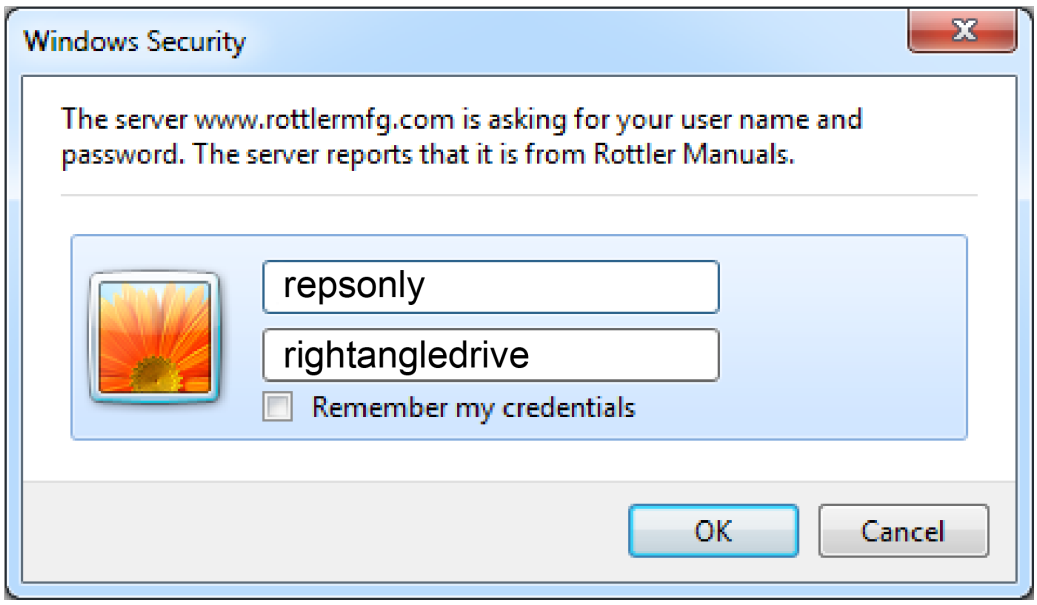
Online Documentation Access

Online documentation for machines and optional equipment can be accessed at the Rottler website. To access documentation open your browser and navigate to https://www.rottlermfg.com.

Scroll to the bottom of the page and under the Owner Resources title click the type of documentation you want to access.



If a log in window pops up asking for user name and password fill in the blanks as shown.



MAINTENANCE

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Maintenance

Quick Reference Lubrication Chart: EM69P

Refer to the maintenance section in the manual for lubrication location points and instruction.

Assembly	Frequency Hours	Lube Operation	Recommended Lubricant	Date Serviced
Way Oil Level	40	Fill as needed	Conoco Brand 76 Way Oil HD 68 or ISO VG 68 equivalent	
Drawbar oil level	160	Fill as needed		

Quick Reference Preventative Maintenance: EM69P

Refer to the procedures in the maintenance section of the manual to make or check these adjustments. ***Not all of the items listed in the table below have adjustment.*** The information should be recorded and the amount of wear tracked so the part can be replaced before down time on the machine occurs.

Procedure	Frequency Hours	Date Serviced/Comments
Long Break-In Cycle	Variable	
Quick Warm-Up Cycle	Daily	
Empty Water Traps	40	
Clean Spindle Chiller Air Filter	40	
Check Way Oil Functionality	160	
Visually Inspect Way Covers	160	
Check Spindle Chiller Level and Settings	160	
Replace Coolant	480	
Check Air Pressure Regulators	480	
Check Backlash	960	
Check Gibbs	960	
Check Home Presets	960	
Check for Loose Bolts	960	
Check Machine Geometry	960	
Check Incoming Voltage	960	

Flush Coolant System	1920	

Removable copy

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Check Spindle Chiller Level and Settings	160	
Replace Coolant	480	
Check Air Pressure Regulators	480	
Check Backlash	960	
Check Gibbs	960	
Check Home Presets	960	
Check for Loose Bolts	960	
Check Machine Geometry	960	
Check Incoming Voltage	960	

Flush Coolant System	1920	

Scheduled Maintenance Procedures

Long Break-In Cycle

A Long Break-In Cycle should be completed whenever any of the following criteria has been met:

- The machine has been transported
- The Spindle has not been run for 7 or more consecutive days
- The spindle has been left out of position (more than 20 degrees from ‘0’) for 8 or more consecutive hours

The Long Break-In Cycle is a process that takes approximately 3 hours and 55 minutes. During this cycle the spindle must be at the ‘0’ position and clear of any objects. It is necessary that the spindle chiller is functioning and air pressure is supplied to the machine. The spindle will then cycle through a series of RPM changes and pauses to properly distribute grease throughout the bearings.

The Long Break-In Cycle can be located in the Direct Path or Direct Surface Programs in the Menu Bar at the top of the screen under; Spindle Warmup Cycles>Long Break In Cycle

Once the cycle has been completed, the machine can be operated normally.

Quick Warm-Up Cycle

The Quick Warm-Up Cycle must be completed every day before the machine is operated. The Quick Warm-Up Cycle lasts approximately 30 min. . During this cycle the spindle must be at the ‘0’ position and clear of any objects. It is necessary that the spindle chiller is functioning and air pressure is supplied

to the machine. The spindle will then cycle through a series of RPM changes and pauses to properly distribute grease throughout the bearings and increase the internal temperature to an acceptable level.

The Quick Warm-Up Cycle can be located in the Direct Path or Direct Surface Programs in the Menu Bar at the top of the screen under; Spindle Warmup Cycles>Quick Warmup.

Once the cycle has been completed, the machine can be operated normally.

Setting the B-Axis Air Pressure

1. Rotate the spindle to 45 degrees.
2. Place something under the spindle so if it falls, it does not damage anything. A wood block is perfect.
3. Push the E-Stop.
4. If the spindle falls, it needs more pressure, if it rises, it needs less pressure

   A. If it needs less air, you will need to release the pressure form the reservoir tank, as it has a one way check valve, then adjust the regulator pressure to where it need to be.

   B. Older machines don't have the one way check valve, so previous step is not necessary.

5. Adjust the valve that controls the pressure to the B axis accordingly.
6. Repeat this process until the spindle does not move when pressing the E-Stop in

Empty Water Traps

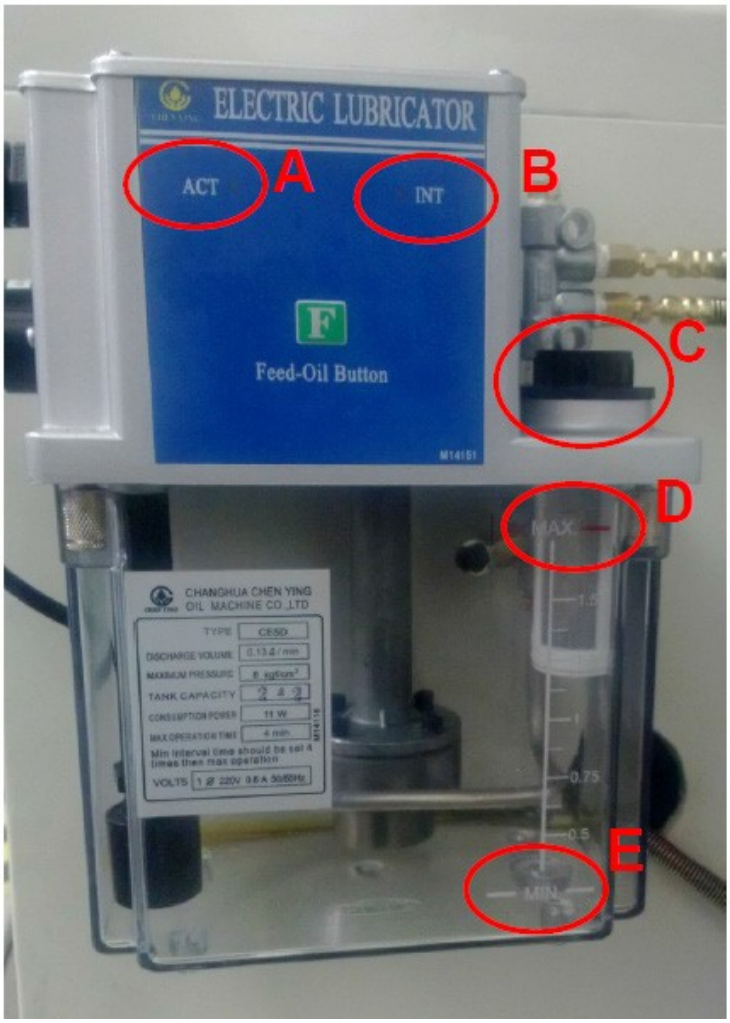
The EM69P is equipped with 2 water traps. The first water trap is located on the main pressure regulator. This water trap has a float that allows it to self-purge whenever water builds up inside of the trap.

The second water trap is located on the back of the machine. This trap should be emptied every week to prevent moisture buildup in the air system that could potentially cause rust accumulation and blockages. At the bottom of this black air reservoir there is a ball valve used to relieve air pressure and moisture.

While emptying the water trap, the B axis must be in the ‘0’ position. Failure to do this can cause a drop of air pressure in the system substantial enough to allow the spindle motor to fall to one side and overextend the tilt assist, causing permanent damage. With air pressure still applied to the machine; open the valve for at least 10 seconds then return it to the closed position.

Check Way Oil (Level)

This machine uses ***ISO VG 68 Way Oil*** to lubricate all moving components. This way oil is contained in a reservoir on the rear of the machine. The reservoir also serves as a pump that is activated for a predetermined amount of time (approximately 30 seconds) after the machine has moved a designated distance (approximately 13,000 inches.) The level of the way oil should be checked weekly.



A) An LED indicates that the oiler is being supplied power and is currently active.

B) An LED indicates that the oiler is being supplied power but is not currently active.

C) This is the fill cap for the oiler. Be sure the filter is in place while filling.

D) This is the maximum amount of oil allowed in the oiler. DO NOT OVERFILL. Overfilling can cause permanent pump damage.

E) This is the minimum amount of oil allowed in the oiler. DO NOT ALLOW TO EMPTY. An empty reservoir can cause permanent pump damage.

Clean Spindle Chiller Air Filter

It is important to clean the air filter of the spindle chiller every week. Failure to do so could cause chiller failure.

1) Dismount the air filter.

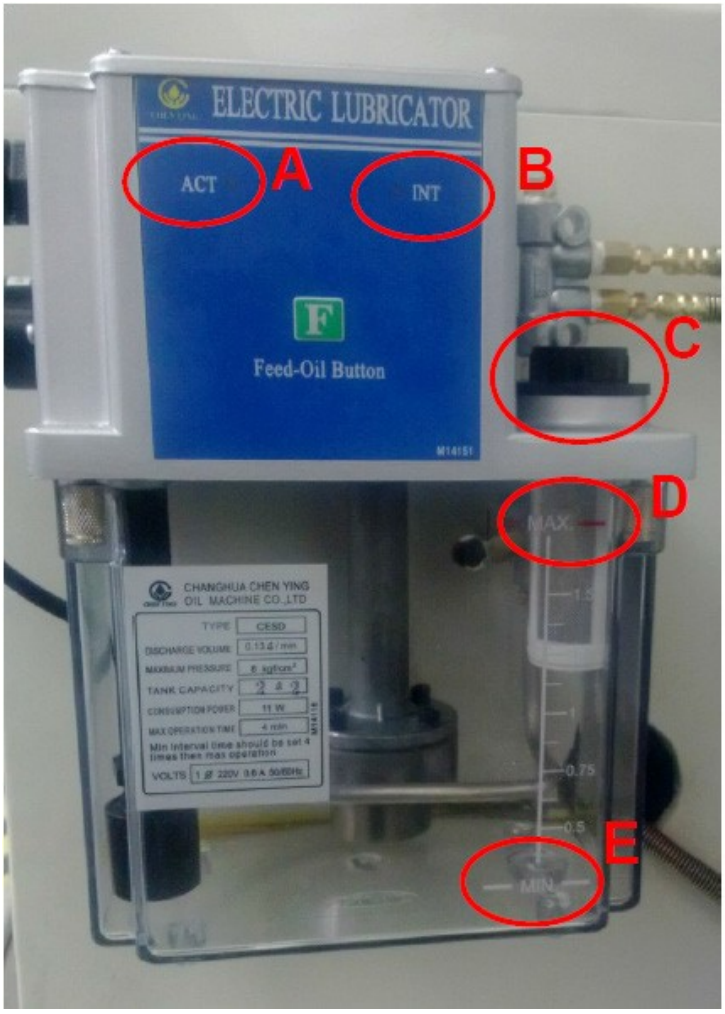
2) Blow dust from the cooling fins using compressed air.

3) Clean dust from the air filter with water or compressed air in the reverse flow.

4) Remount air filter.

Check Way Oil (Functionality)

This machine uses Multipurpose Way Oil to lubricate all moving components. This way oil is contained in a reservoir on the rear of the machine. The reservoir also serves as a pump that is activated for a predetermined amount of time (approximately 30 seconds) after the machine has moved a designated distance (approximately 13,000 inches.) The functionality of the oil pump should be checked weekly.



A) An LED indicates that the oiler is being supplied power and is currently active.

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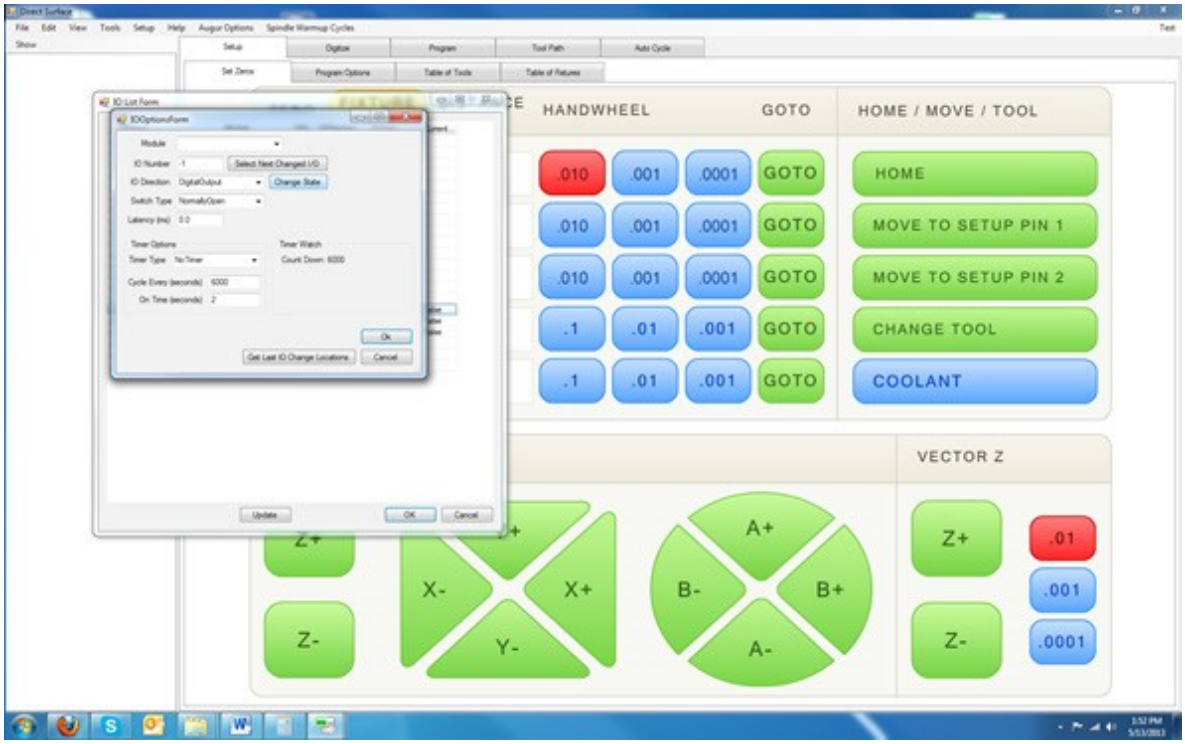
D) This is the maximum amount of oil allowed in the oiler. DO NOT OVERFILL. Overfilling can cause permanent pump damage.

E) This is the minimum amount of oil allowed in the oiler. DO NOT ALLOW TO EMPTY. An empty reservoir can cause permanent pump damage.

To check the functionality of the pump, go to Setup > I/O.

Expand the “Oiler Addin” section and double-click on “Oiler.”

Click on the “Chane State” button ONE TIME. This will apply power to the oiler at the rear of the machine. Once you have done this, walk to the rear of the machine (within 30 seconds) and check that the pump is operating by visually observing the “ACT” LED is on.



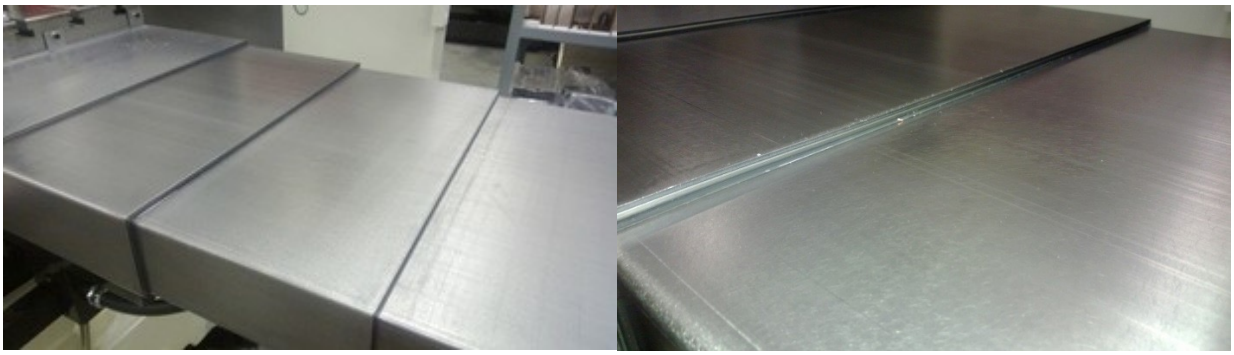
Once you have verified that the oil pump is active, return to the monitor and click the “Change State” button one time to release power from the oiler. Visually check the oiler to verify that power has been released. Close all setup windows.

If the “ACT” LED is not on but the “INT” LED is, remain in the rear of the machine and have someone else press “Change State” button one time to turn off the “INT” LED, then once more to turn the power back on. The “ACT” LED should come on and stay active for approximately 30 seconds. If it does, return to the monitor and click the “Change State” button one time to release power from the oiler. Visually check the oiler to verify that power has been released. Close all setup windows.

If the “ACT” LED does not illuminate at all, or is illuminated for less than 20 seconds, please contact a Rottler Manufacturing technician for further assistance.

Way Cover Maintenance

Way covers should be inspected weekly. Move table to limit of its travel on each side and clean any chips from the covers. It is important to keep all way covers in good working condition. Doing this will allow the way covers to keep coolant and dirt from entering the ways and dramatically reduce wear on the machine. You should visually inspect the X axis way covers to the left and right of the table, Y axis way covers on the front and rear of the table, and the Z axis way cover under the spindle base. The ways should be free of rust and the seals should be in contact with the way cover for the entire width of the seal.

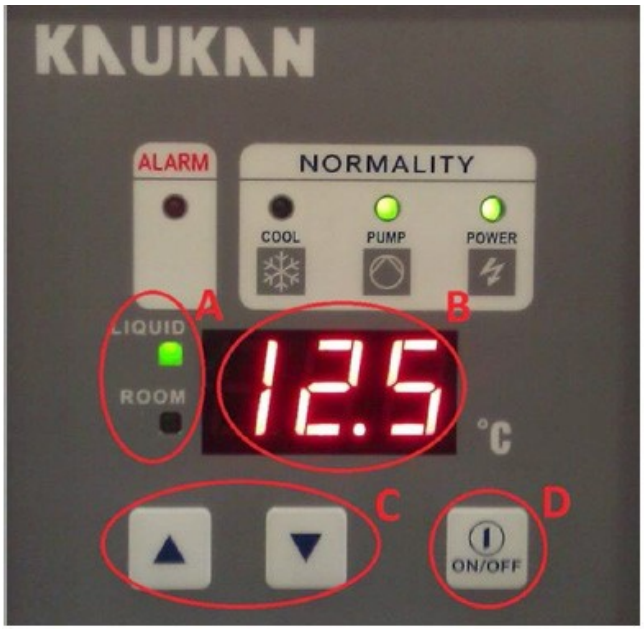


Fully extend the way cover being inspected and wipe clean with WD-40 (or a similar lubricant). If there is rust on the way cover, coat a Scotch-Brite pad with WD-40 and gently clean the surface in a circular motion until the rust is removed. Wipe clean with WD-40 after completed.

If any of the seals are damaged or the way covers are dented in a way that doesn't allow them to seal for the entire width of the way and throughout travel, the way cover must be repaired or replaced. Please contact a Rottler Manufacturing technician to obtain replacement parts.

Check Spindle Chiller Level and Settings

The spindle on this machine is equipped with an oil chiller unit. This oil chiller acts as a reservoir and a temperature regulator for the spindle. Once per month the chiller should be checked for proper settings and oil levels.



A) Indicates whether the number displayed is room or oil temperature.

B) Celsius reading of temperature.

C) Allows you to change temperature settings of the oil chiller.

D) Toggles the temperature display between oil and room temperature.

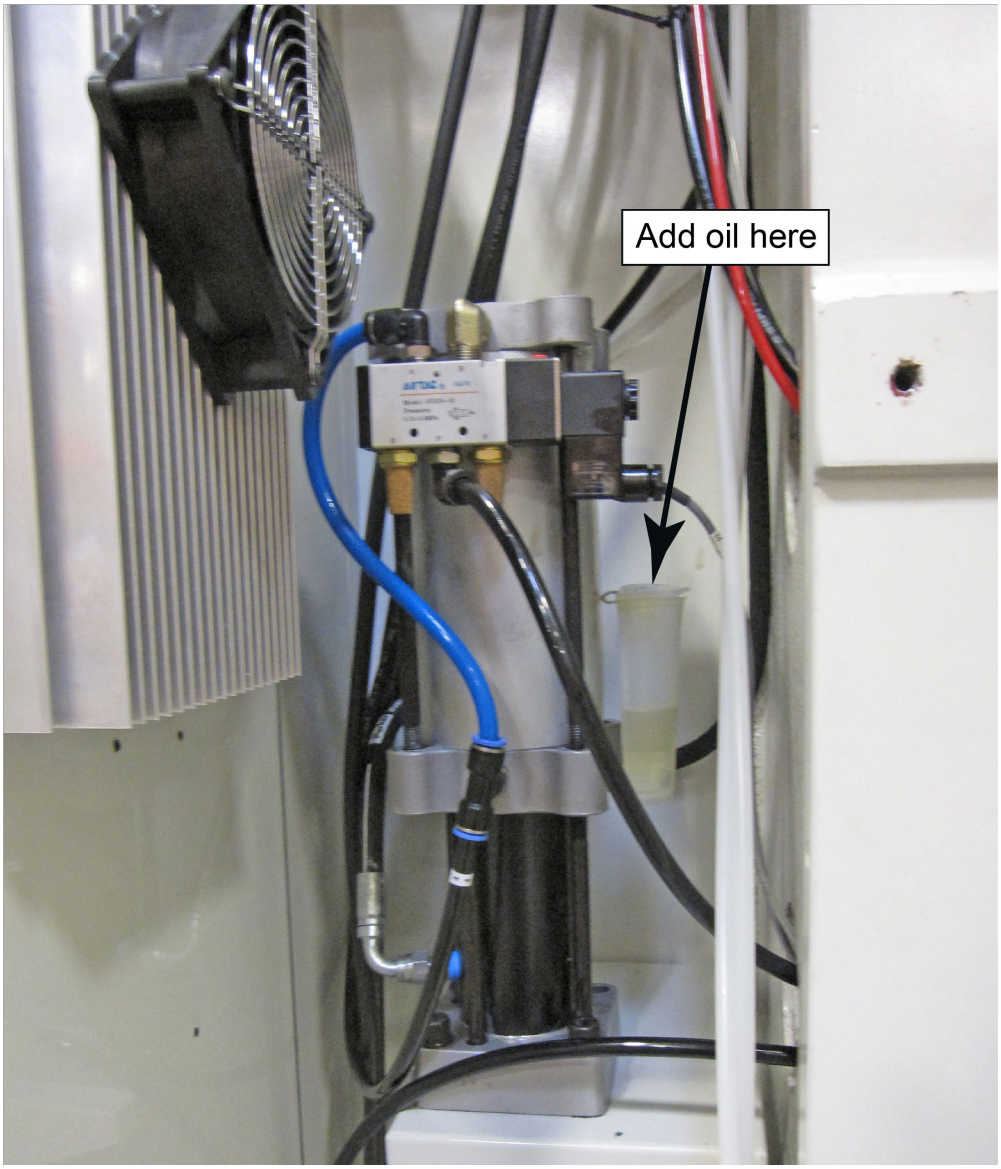
To check the temperature settings, first press the ON/ OFF button until the “ROOM” LED is illuminated. This will display he room temperature in Celsius. Next, hold either of the ‘up/down’ buttons until the numbers on the display flash. They will display a number between 15 and -15. This number indicates the target oil temperature in comparison to the room temperature. For best results this number should display 3.0 in a room that has an average temperature of 19.5 degrees(C) or lower, or -3.0 in a room that has an average temperature of 20 degrees(C) or higher. Press the “ON/OFF” button to save any changes.

The oil level sight glass is located on the bottom of the oil cooler. This also has a mercury thermometer in it to indicate oil temperature. This sight glass should be filled to the black line at the top. If he oil is not filled to the black line it must be topped off with air tool oil. The oil fill can be reached by removing the air filter and two phillips head screws located above the panel labeled “SUPPLY.”

Check Drawbar Oil Level

Once per month the oil level in the drawbar should be checked. I the oil level gets too low it can cause permanent damage to the drawbar. The reservoir is a clear container on the side of the drawbar. It should be filled to the top line with clean tool oil. If it is not, simply remove the cap, refill, and replace the cap.

If the reservoir is ever completely empty during this check please contact a Rottler Manufacturing technician for trouble shooting procedures.

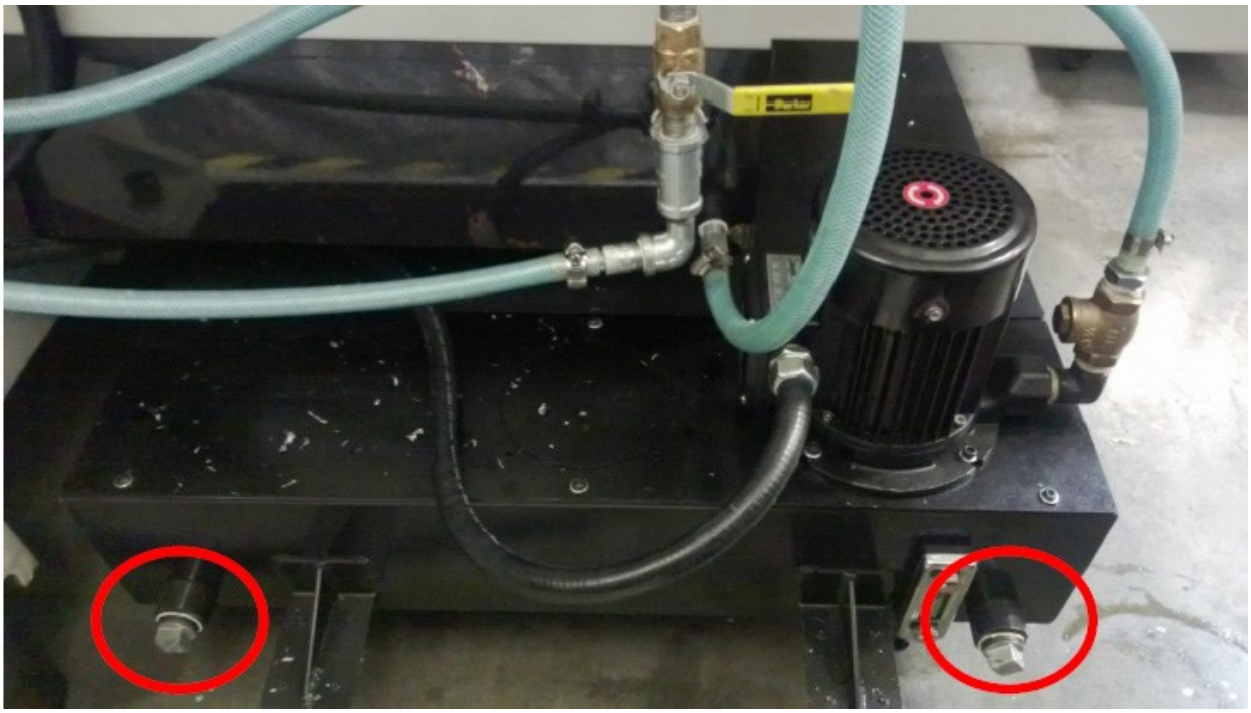


Replace Coolant

It is imperative that the coolant in the machine retains all of its lubricating properties. If it fails to do this it can cause the machine to rust in inaccessible areas, and cause permanent machine damage. The coolant should always be mixed according to the coolant manufacturer's specifications. (Generally near a 10:1 water to coolant solution mixture.)

To replace the coolant in the machine you may either install a petcock in the drainage plug in the rear of the coolant tank, or remove it via a pump/vacuum from the top of the tank were the coolant pump is located. Due to the baffle system within the coolant tank, this may leave sediment in the bottom of the tank. If machining a lot of ferrous metals it may be necessary to clean this sediment out by removing the cover of the coolant tank. (Remember; the coolant from this machine may be considered "hazardous waste." Please check with local laws and dispose of the coolant accordingly.)

Refill the coolant tank with water/coolant mixture until it is near the top of the lowest point on the coolant tank. (Usually the coolant pump housing.)



Lubrication

Automatic Lubrication System

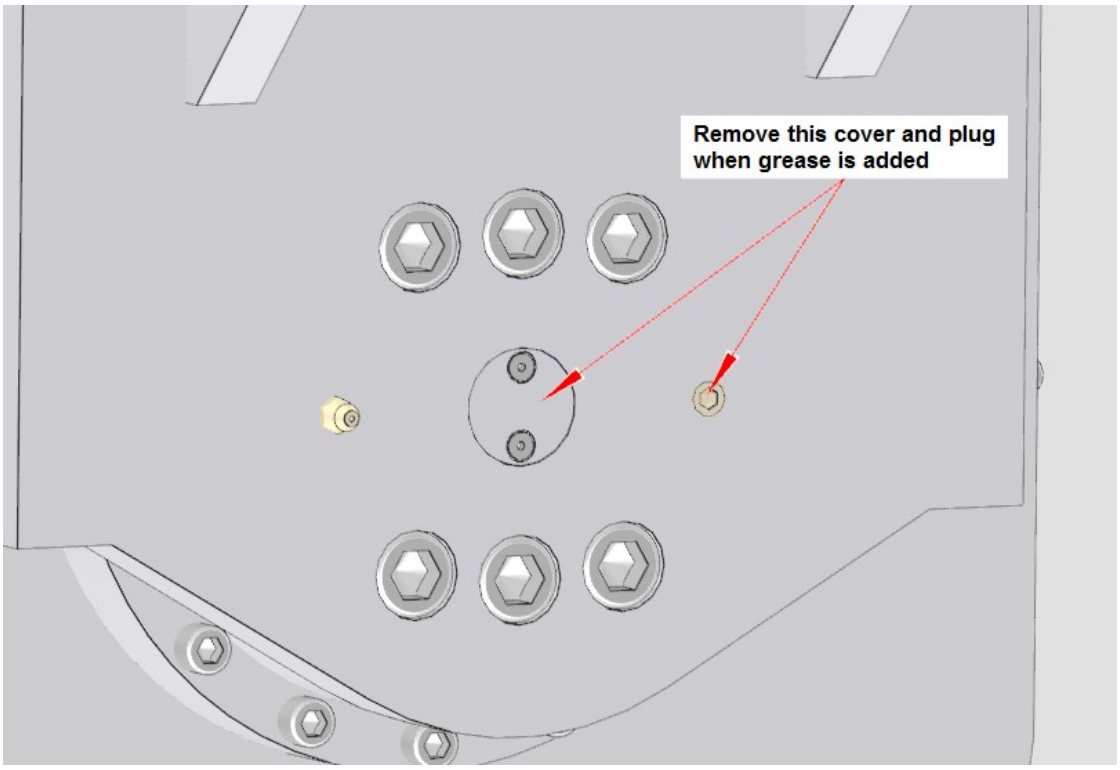
The automatic lubrication system includes metering valves for proportional distribution and includes an alarm for low fluid level warning. Still, please check fluid level before operation. Add ***Union 76 Way Oil HD-68***, or equivalent, as needed in reservoir at rear of machine.

Power Draw Bar Lubrication

The Power Draw Bar assembly needs to have oil supplied in the air line to it. Use machine tool oil in this reservoir. The reservoir is located on the back of the main column of the machine. Refer to the following illustration for filling location.

A & B-Axis Gearbox Lubrication

The A & B-Axis gearboxes should be greased on a weekly basis. Fill with grease weekly ensures that any coolant that may have seeped into the gearbox is forced out when grease is pumped into the gearbox. Remove the plug and cover plate located on the spindle base. Add grease at the grease fitting until there is overflow coming out of hole where cover plate was removed. Remove excess grease and replace cover plate. Continue to add grease until there is overflow coming out of the plug hole. Remove excess grease and replace plug.



Vertical Ballscrew Bearings

Every 175 Hours:

These bearings should be greased with ***Unoba EP 2 Multi Purpose Grease or equivalent NLGI 2 grease***.

Probe "On-Center" Adjustment

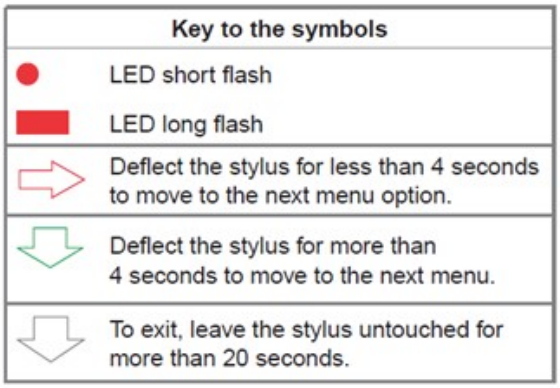
This covers setup and calibration of the probe, so it will accurately position your machine.

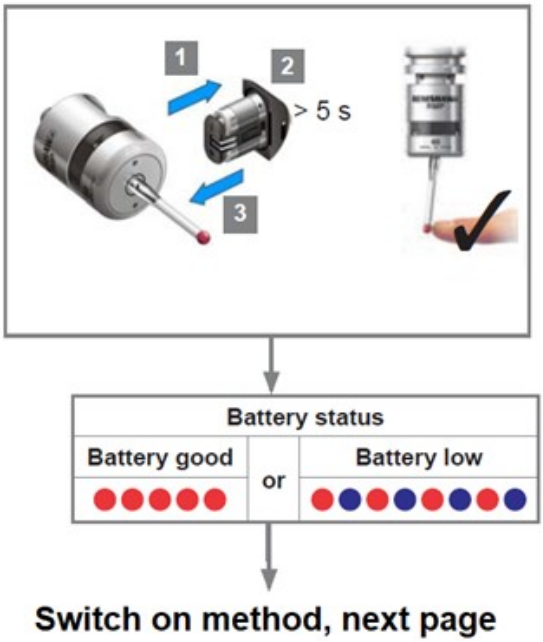
- Verify that the four adjusting screws and two locking screws are installed in the probe tool holder.
- Assemble probe on either CAT 40 Shank or Rottler Taper
- With the machine breaker that supplies power to the probe receiver turned off;
- Install batteries in the probe WITH stylus deflected.

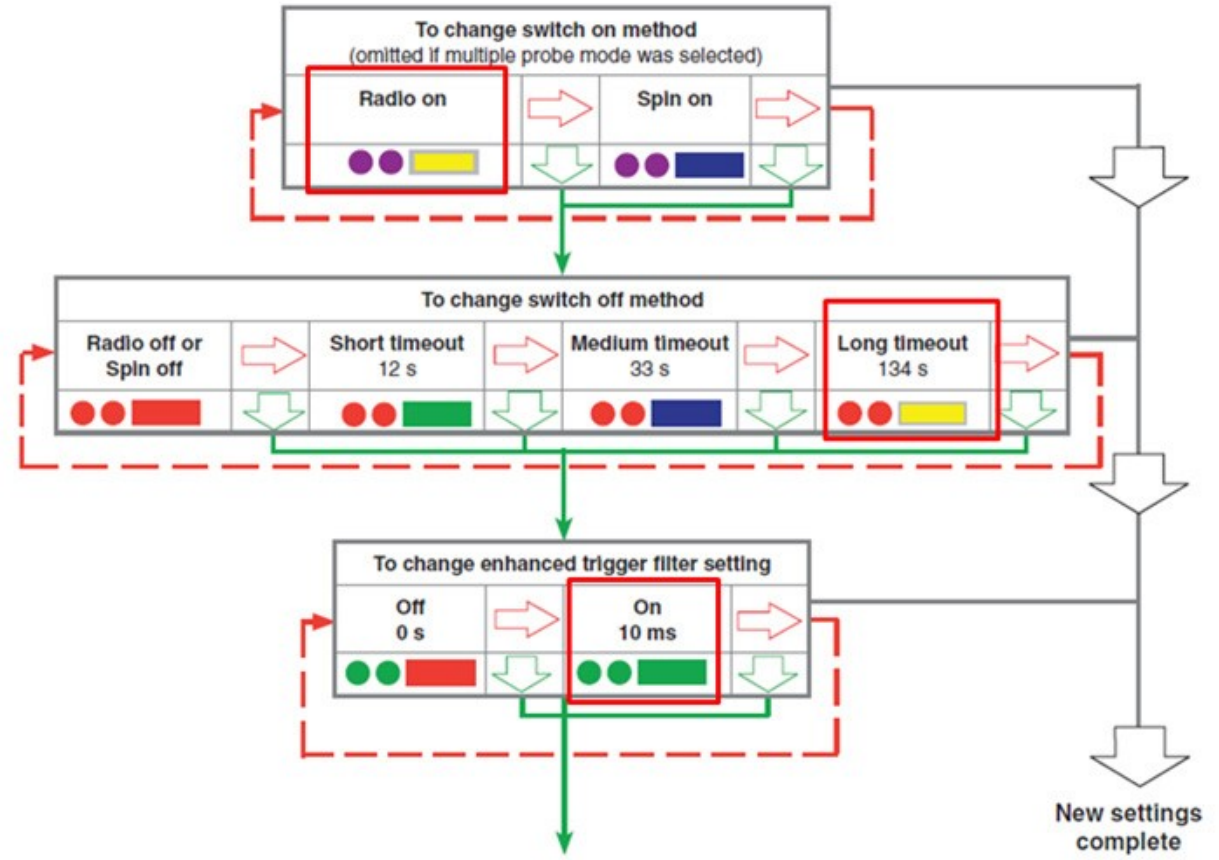
Probe LED check will run.

- Release stylus after battery check this will put you in edit mode.
- First will be Switch off method, you want this at purple, purple, yellow (Radio On). If it is not, deflect and release stylus quickly to change the mode.
- Hold the stylus deflected until the colors change to move to the next setting.
- You should be at Switch Off method; it should be red, red, yellow (134 seconds). If it is not, deflect and release stylus quickly to change the mode.
- Hold the stylus deflected until the colors change to move to the next setting.

- You should be at Enhanced trigger filter; it should be green, green, green (on). If it is not, deflect and release stylus quickly to change the mode.
- Hold the stylus deflected until the colors change again to move to the next setting.
- You should be at Acquisition mode, light blue, light blue, light blue.
- Turn on machine and quickly deflect and release the stylus. This must be done within 10 seconds of turning on the power breaker to the probe. If you are watching the RMI-Q (located ON the machine) you will see the right light turn red, yellow, red, yellow, red, yellow is shows the partnership has been acquired.
- Go into the software and do a probe auto center and hit start probe to verify that it works correctly.



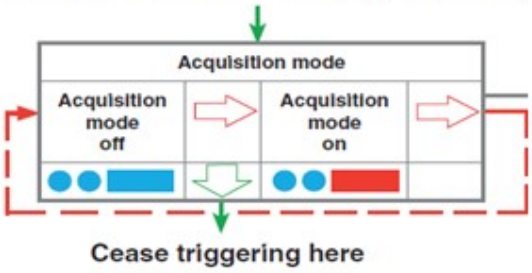




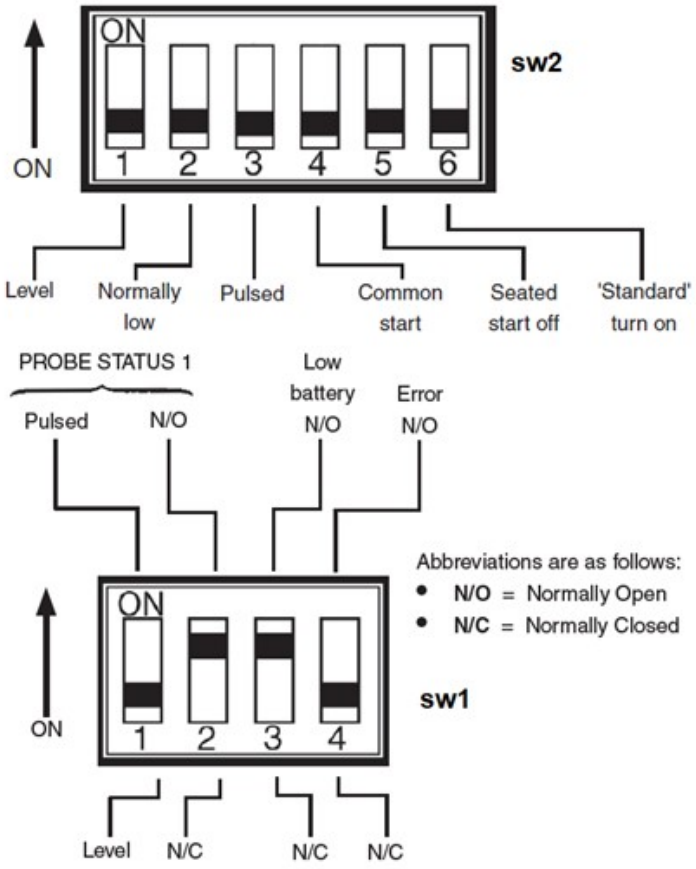
Changing the probe settings (continued)

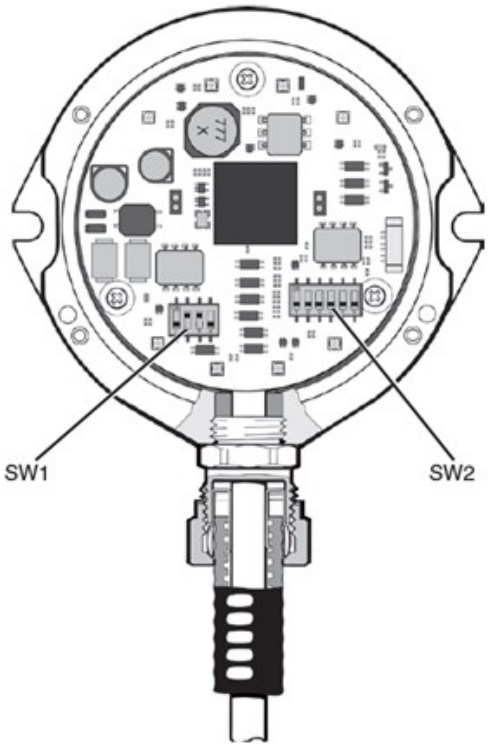
Note: After the RMI has been acquired, the RMP40 will only show Acquisition mode off.

See RMP40 - RMI partnership.



If the Probe does not turn off after 137 seconds you will need to make sure that the RMI-Q switches are shown in the following positions:





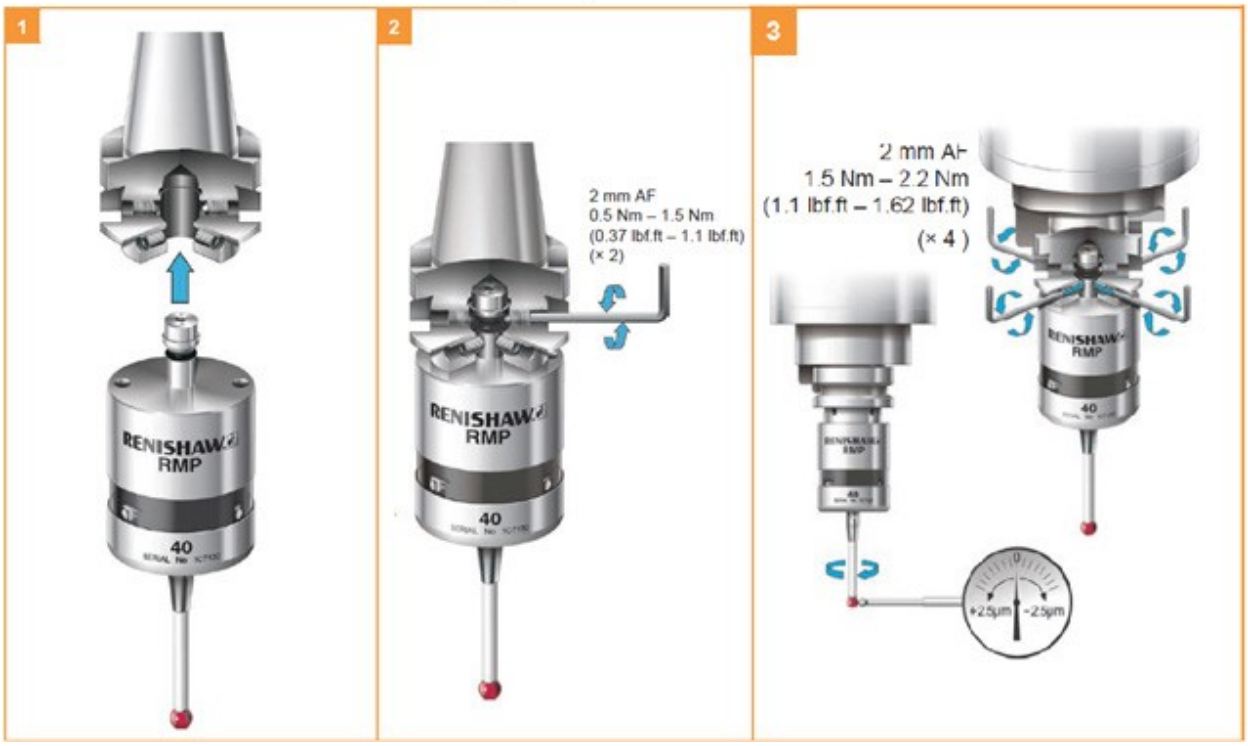
During normal use, the difference between the touch position and the reported position does not change, but it is important that the probe is calibrated in the following circumstances:

- when a probe system is to be used for the first time;
- when a new stylus is fitted to the probe;
- when it is suspected that the stylus has become distorted or that the probe has crashed;
- at regular intervals to compensate for mechanical changes of your machine tool;
- if repeatability of relocation of the probe shank is poor. In this case, the probe may need to be recalibrated each time it is selected.

It is good practice to set the tip of the stylus on center, because this reduces the effect of any variation in spindle and tool orientation. A small amount of run-out is acceptable, and can be compensated for as part of the normal calibration process.

- calibrating either in a bored hole of know size, a ring gauge, or on a datum sphere.

Mounting the probe on a shank



- Dial the probe stylus into center using a .0001” indicator to within .0005” the tighter tolerance you hold the more accurate the machine will be. You must use an indicator that takes very little pressure to get a reading. Excessive pressure on the stylus will deflect the probe and you will not be able to dial it in correctly.
- Go to the Main/Block Model screen and select the Table of Tools. You may only have a Default Tool #0 listed.
- Press Add Tool. This will bring up a dialog box. Change the name from default tool to probe style that you are installing i.e. 50mm stylus, 100mm stylus. Set the diameter to .2360” this is default probe tip on a 50mm,100mm, and 17.5mm.
- Install a block, or parallels onto the machine and secure it solidly to the machine table.
- Place the Ring Gauge onto the top of the block, use Probe Auto Center to find center zero your X and Y axis here. Make sure you use a ring gauge or a hole of a known diameter. This will set the correct probe timing.
- Adjust the probed diameter by going to the IO under Setup Electronics and changing the Probe MS. You will need to increase or decrease the MS of the probe to achieve correct Probe Diameter.
- Repeat until the correct diameter is displayed.
- Probe Auto Center the ring gauge, without moving X or Y, remove the probe up in Z and Install the cutter head. Put a magnet base with the Last Word indicator on the cutter head and sweep the cylinder/ring gauge.
- The variation in X and Y Should be less than .0005.
- If not add compensation to ProbeOffSet under > Setup Eletronics-Addins-ProbeSetup

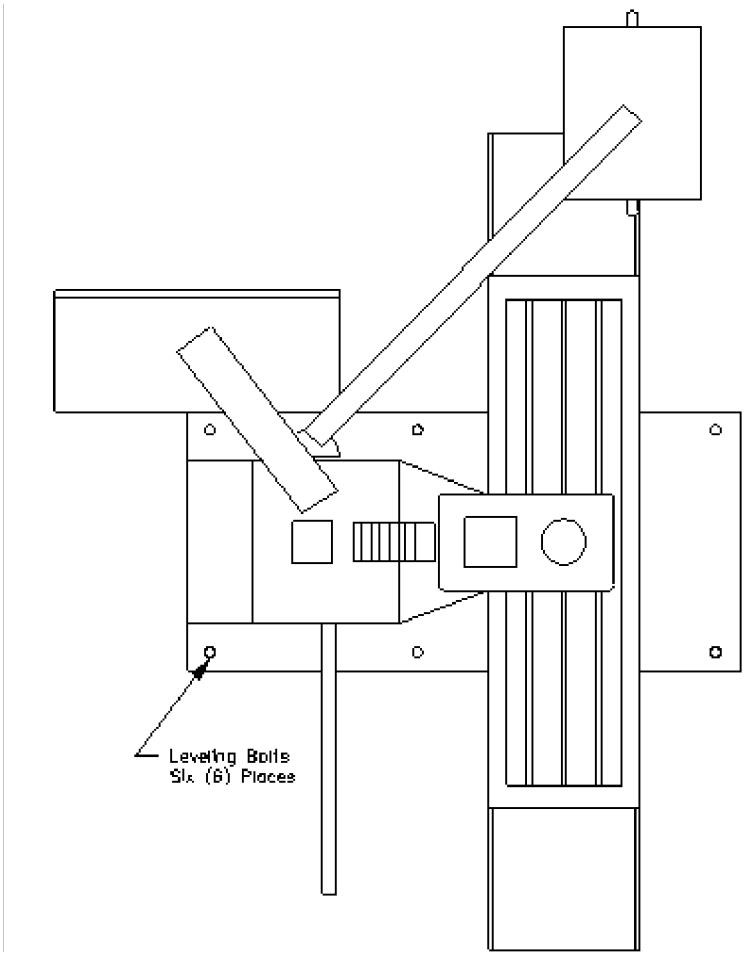
Leveling and Alignment

The following is a description of how to properly level and align the EM69P machine. These procedures should be followed in the order they written to obtain correct machine level and alignment.

Leveling the Machine

After uncrating the EM69P set it down in desired location with leveling bolts and leveling pads installed.

Remove the Y-Axis protective rubber located on the backside of the table. This is where you will position the level to level the machine. A .0005” increment per foot precision level is required.



(Illustration depicts the procedure described, but does not represent actual machine)

Using the four (4) corner leveling bolt to start with, bring the machine up to level in both directions (front to back and left to right) within .0005” per foot.

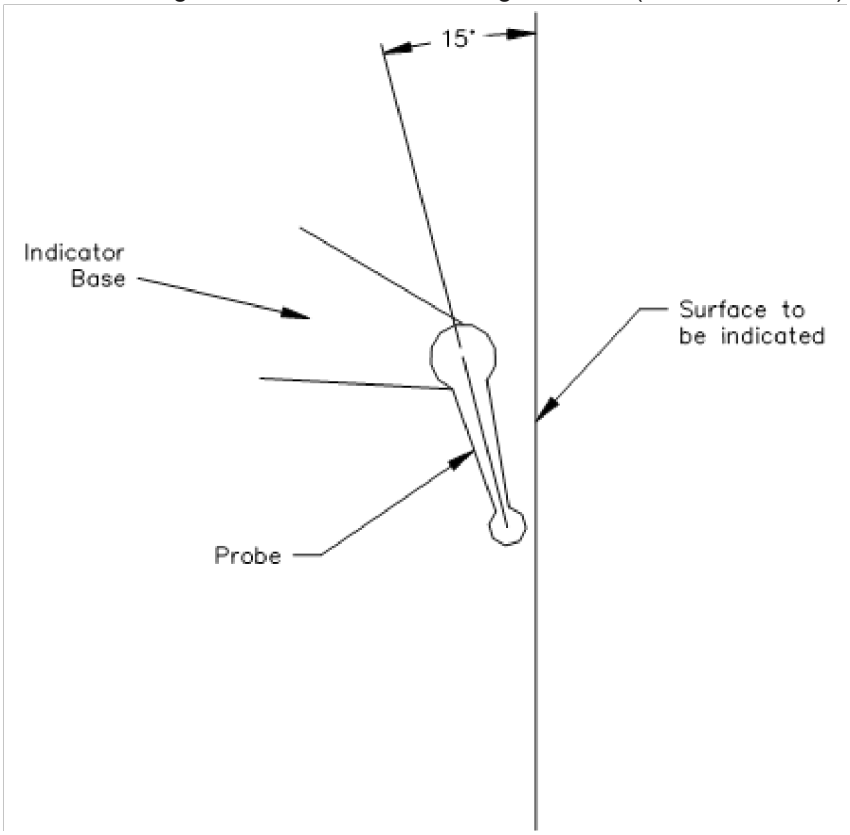
After you have leveled the bed using the four corner bolts, move to the middle leveling bolts. Bring these bolts down until they have approximately the same amount of pressure on them as them as the four corner bolts. Be careful not to throw the level of the machine off while doing this.

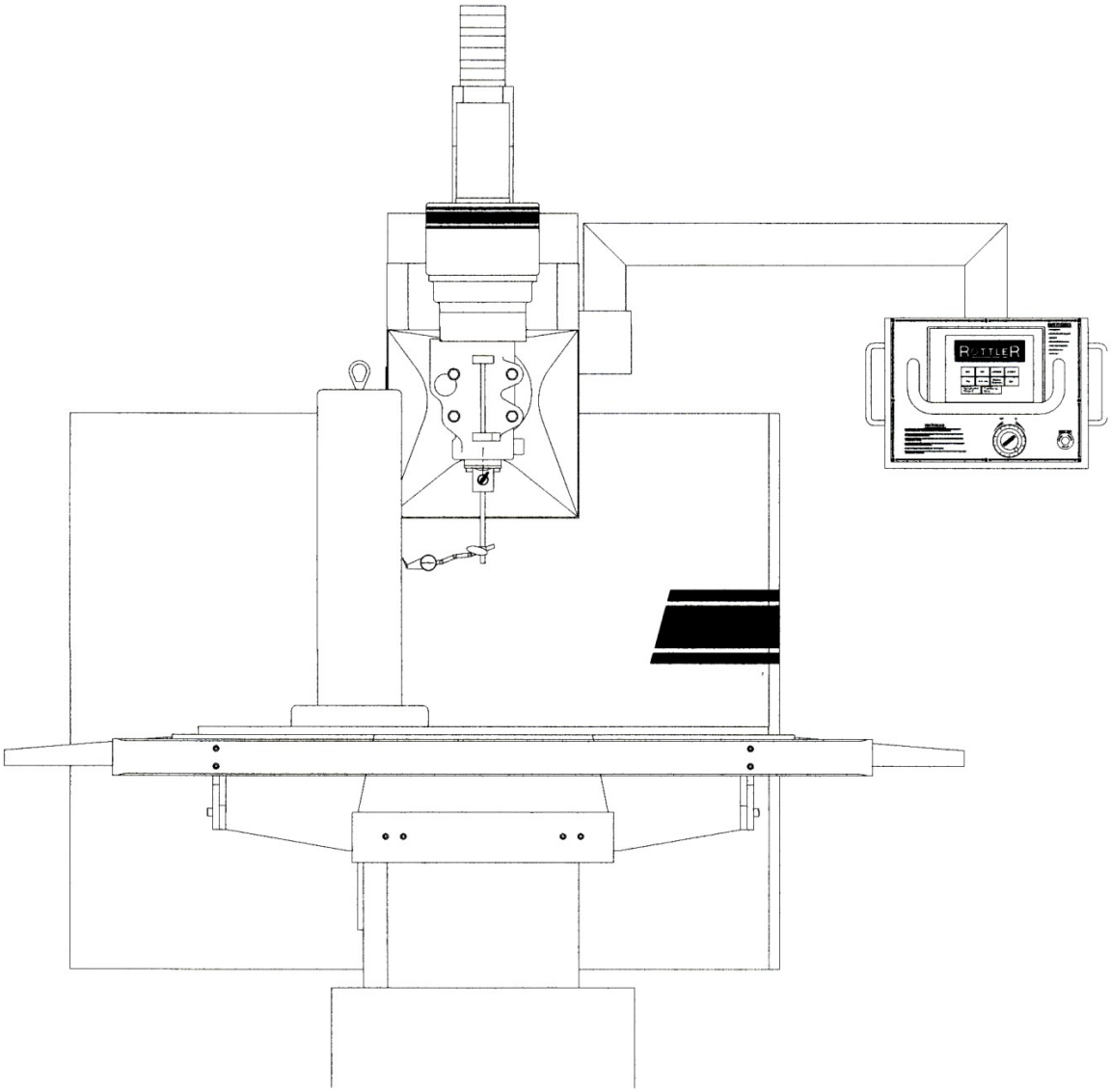
This will put the lower casting level.

Alignment

Place the alignment cylinder on the table in roughly the same position as shown on the following page.

Note: The position (angle) of the probe to the surface you are indicating is critical. Using an incorrect angle on the probe will result in inaccurate readings from the surface being indicated. The angle of the probe should be at about 15 degrees from the surface being indicated (see illustration 2).

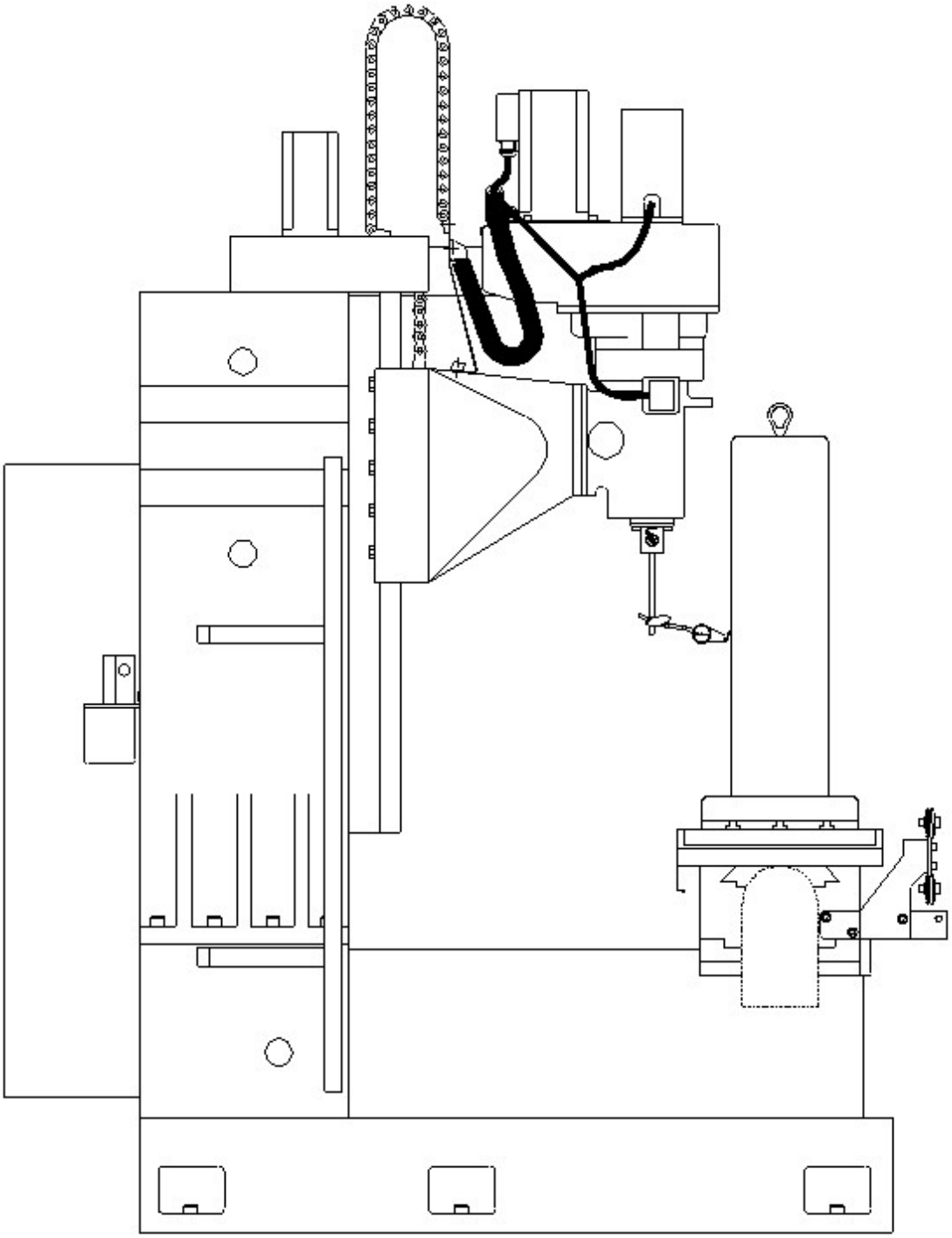




(Illustration depicts the procedure described, but does not represent actual machine)

Put about .010” pressure on the indicator. Run the vertical throughout its full travel. The runout should not be more than .0005. If the runout is more than this, check the table top as well as the bottom of the alignment cylinder for burrs or debris.

Move the table out and check the perpendicularity of the vertical ways. This should be within .0005”.



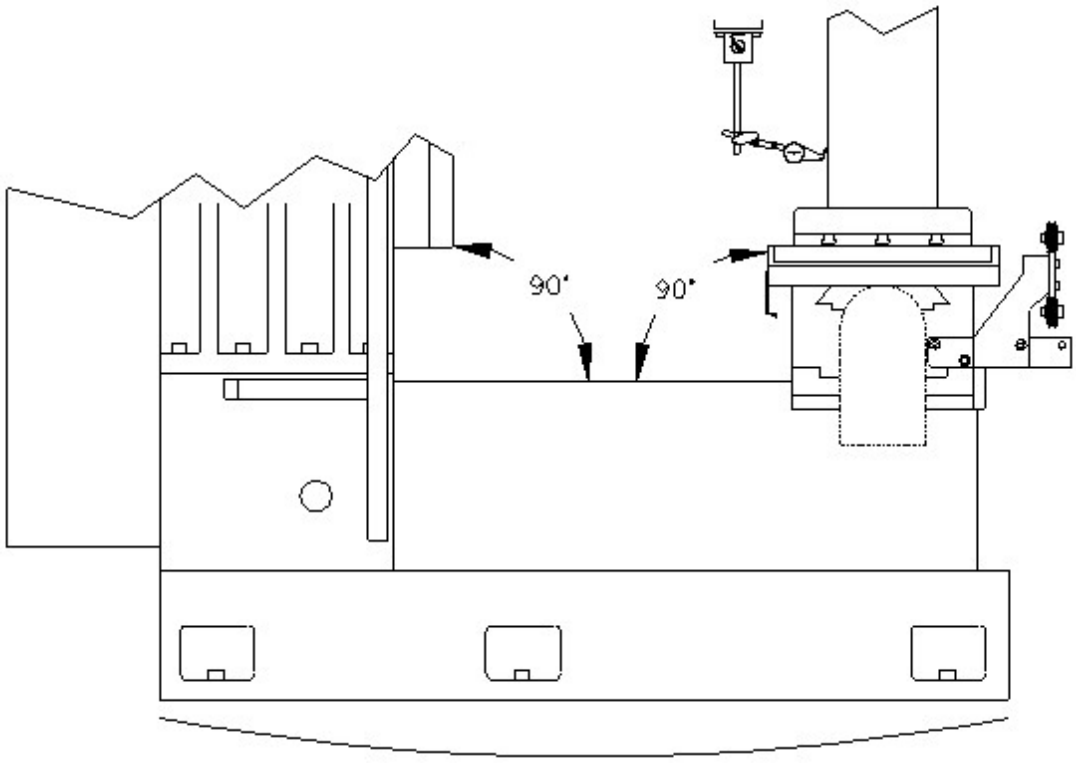
(Illustration depicts the procedure described, but does not represent actual machine)

If the Vertical perpendicularity is not within tolerance the Middle Leveling Bolts may need to be adjusted.

Middle Leveling Bolts

If the procedures for the Leveling was followed correctly, it is unlikely that the deviance from Front to Back is being caused by the Middle Leveling Bolts. The following are examples of what could be caused by incorrect pressure on the middle leveling bolts.

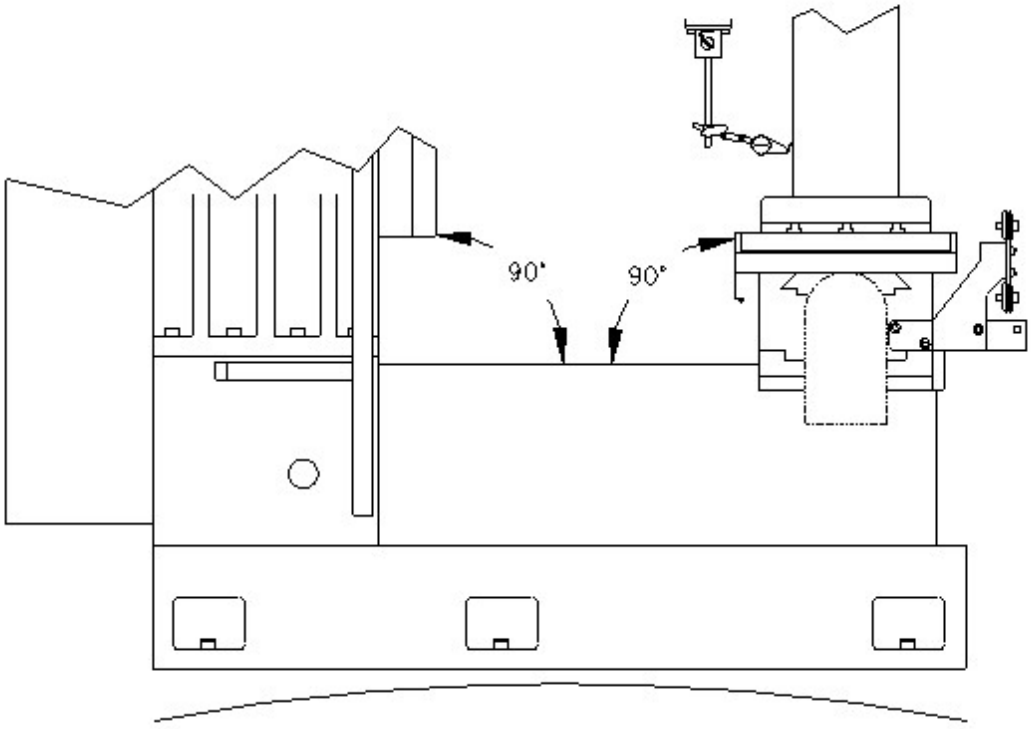
Example 1: Zero the indicator on the top of the cylinder. When traveling to the bottom of the cylinder, if the reading decreases past -.001” to something such as -.002”, then the middle leveling bolts have too little pressure on them and it is bowing the casting slightly in the middle as shown below.



The arched line underneath the picture is illustrating the bow to the casting if the middle leveling bolts have too little pressure on them.

To correct the deviance slowly add pressure to the middle bolts equally. Be sure to watch the level of the machine to be sure not to throw it off. After adding pressure from the middle bolts you can remove pressure from the front and rear corner bolts to bring the deviance within .001”.

Example 2: Zero the indicator on the top of the cylinder. When traveling to the bottom of the cylinder, if the reading decreases past +.001” to something such as +.002”, then the middle leveling bolts have too much pressure on them and it is bowing the casting slightly in the middle as shown below.

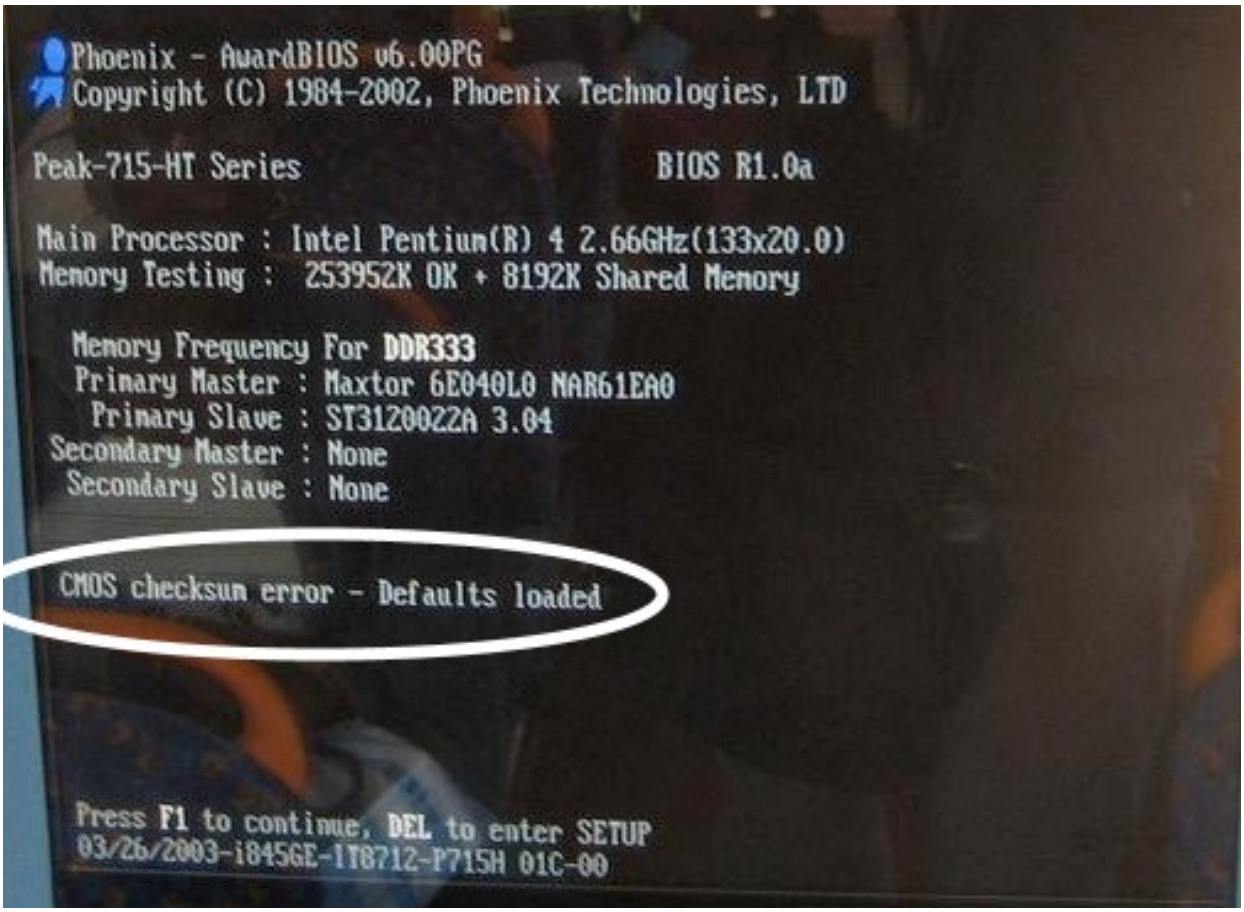


The arched line underneath the picture is illustrating the bow to the casting if the middle leveling bolts have too much pressure on them.

To correct the deviance slowly remove pressure from the middle bolts equally. Be sure to watch the level of the machine to be sure not to throw it off. After relieving pressure from the middle bolts you can apply slightly more pressure to the front corner bolts to bring the deviance within .001”.

Replacing the Motherboard Battery

If computer fails to boot up and you get a CMOS error message on the screen, then the battery on the computer motherboard has failed and needs to be replaced.



The following is the procedure for replacing the motherboard battery.

Turn off the power on the electrical enclosure and remove the enclosure cover.

Locate the computer and check to see that the power light is not on. If it is on turn off the power switch.
Note: On some machines it may be necessary to unbolt the computer from the enclosure in order to gain access to the cover screws.

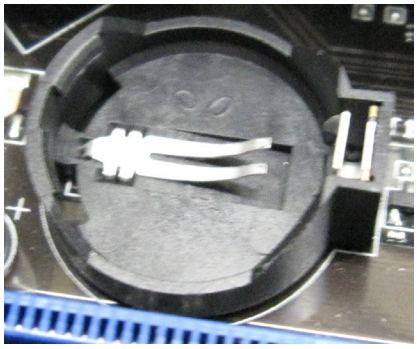
Remove the 6 screws indicated by the arrows from the cover.

Remove the cover.

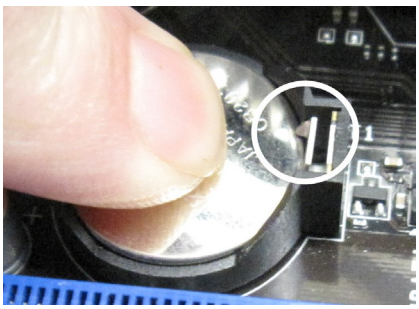
Locate the battery on the motherboard.

Push the battery retention clip away from the battery. When the clip is released the battery will pop up.

Remove the battery and place new battery in the battery holder.



Using your finger tip push down on the battery until the retention clip is in its lock position.



Replace computer cover and make sure that power switch on the computer is on.

Replace the enclosure cover and switch power back on.

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TROUBLESHOOTING

Problem:

Icon on screen does not move to area touched.

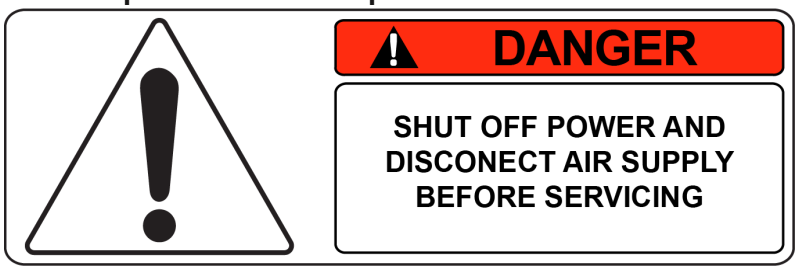
Solution:

Follow the procedure below to recalibrate the touchscreen.

1. Get to the Alignment screen.
    1. If an Elo icon is available in the tool tray at the lower right side of the desktop, click it, then click Align.
    2. Otherwise, go to the Windows Control Panel, double-click Elo Touchscreen and click the Align button on the General tab.
        1. If Windows XP and no Elo icon, click the “Switch to Classic View” button on the left
        2. If Windows 7 and no Elo icon, look for “View by: Category” text toward the upper right; click it and select “Small icons”
2. Touch and release the upper left target; the target should jump to the lower right.
3. Touch and release the lower right target; the target should jump to the upper right.
4. Touch and release the upper right target; a check screen should appear.
5. Touch and release the green check mark; the check screen should disappear.
6. The cursor should now jump to the point of touch.
7. If the Elo Control Panel is open, close it and the Windows Control Panel.

Problem:

Tool change was interrupted and not completed



Solution:

If a tool change is interrupted and not completed, the machine must be shut down. Disconnect the power supply and remove the air supply from the machine. Remove the tool by hand.

For further assistance in troubleshooting:

Please visit the service tab of our web page at Send a Service Request www.rottlermfg.com or contact the Rottler Factory Service at service@rottlermfg.com for assistance and your service request.

You may also call Rottler at 1-800-452-0534 or 1-253-872-7050

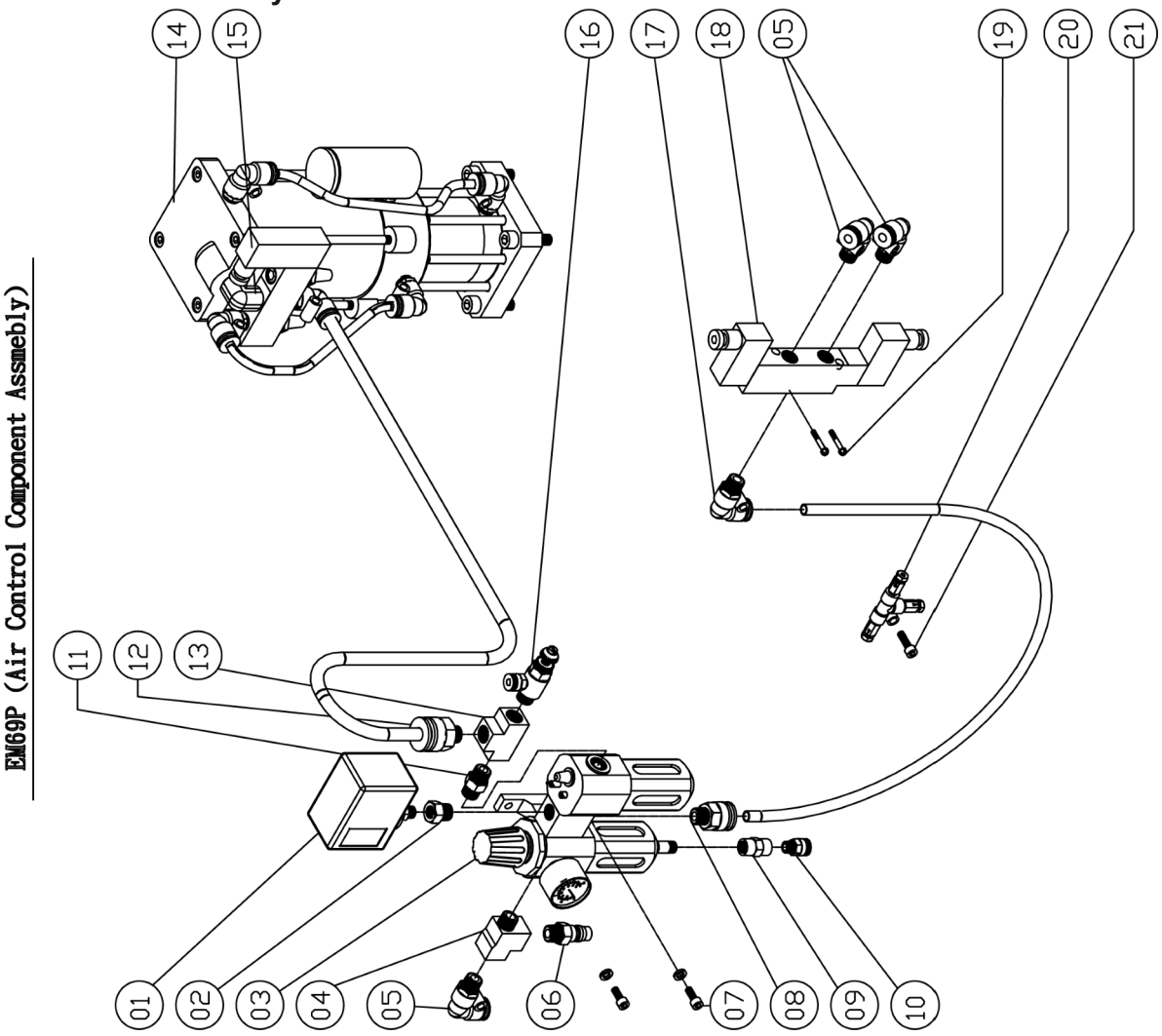
Please ensure you have the Machine Model and Serial Number available when contacting Rottler for Service

MACHINE PARTS

Contents

Machine Parts

Air Control Assembly Parts



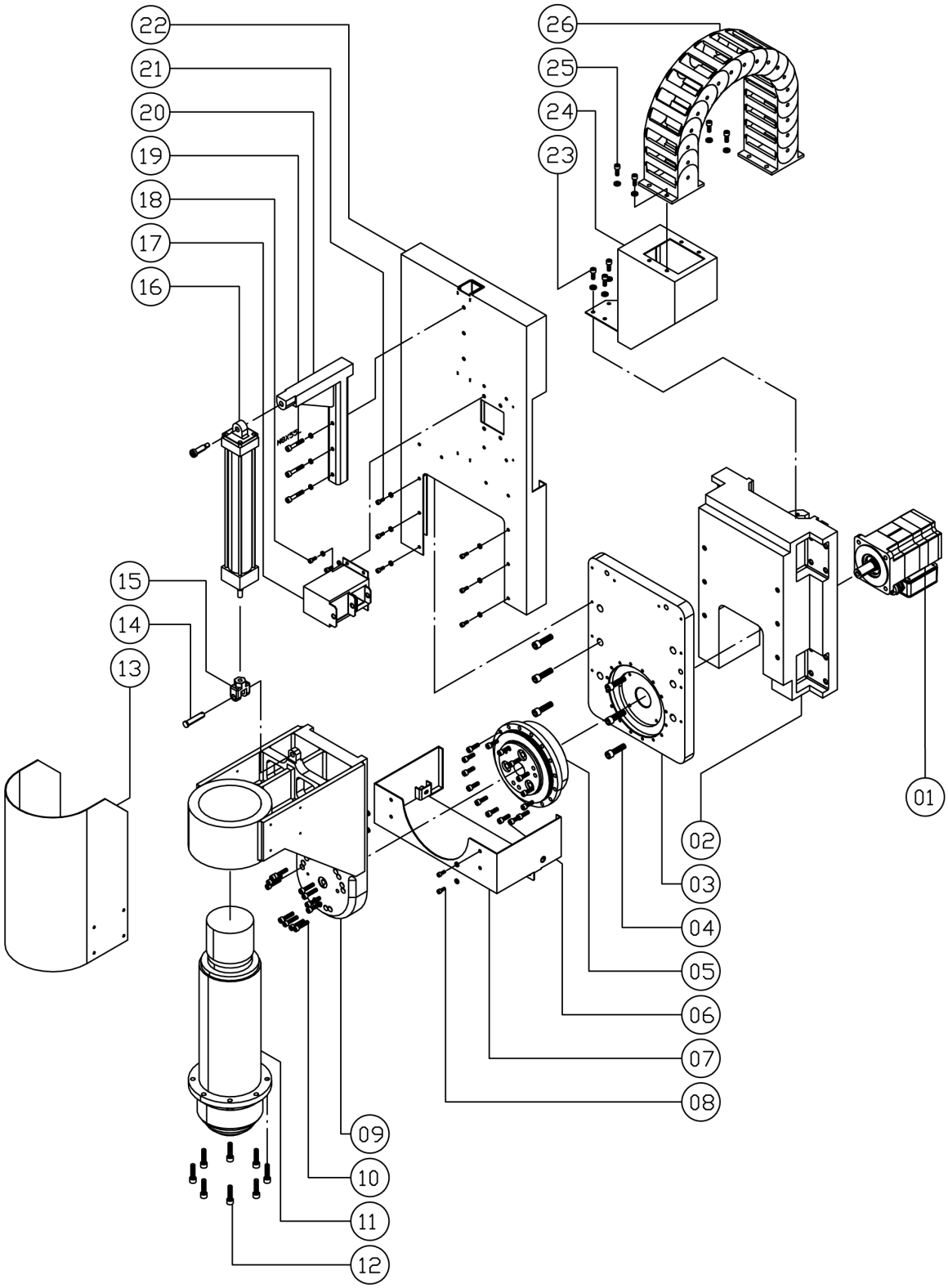
EM69P Part List

Air Control Component Assmebly

	Part Number	Part Name	Specification	Qty	Remark
01		Gauge pressure switch	SAFE-S971	1	
02		Bushing	PT3/8xPF1/4	1	
03	MV13601020-7	3 Way connector	MACP300-10A	1	
04		Thread connector	PT3/8xPT3/8xPT3/8	1	
05		90˚ Quick joint	PT3/8x⌀8	3	
06		Double hose end join	PT3/8x⌀1/2"	1	
07		Cap Screw	M6x1Px16L	2	
08		Air quick connector	PT3/8x⌀10	1	
09		Bushing	PT1/4xPT1/4	1	
10		Quick joint	PT1/4x⌀6	1	
11		Joint	PT3/8xPT3/8	1	
12		Quick joint	PT3/8x⌀12	1	
13		Three thread connector	PT3/8xPT3/8	1	
14		Air to oil cylinder	90~100kgf/Cm², 80C.C	1	
15		Air solenoid valve	4V310-10(DC21.6~26.4V)	1	
16		Quick joint	PT3/8x⌀6	1	
17		90˚ Quick joint	PT3/8x⌀10	1	
18		Air solenoid valve	MVSC-220-4E2(DC24V	1	
19		Cross recessed pan head screw	M4x0.7Px45L	2	
20	EM-154-17	3 Way junction		1	
21		Cap Screw	M6x1Px25L	1	

Spindle Head Assembly Parts

EM69P (Spindle Head Assembly)



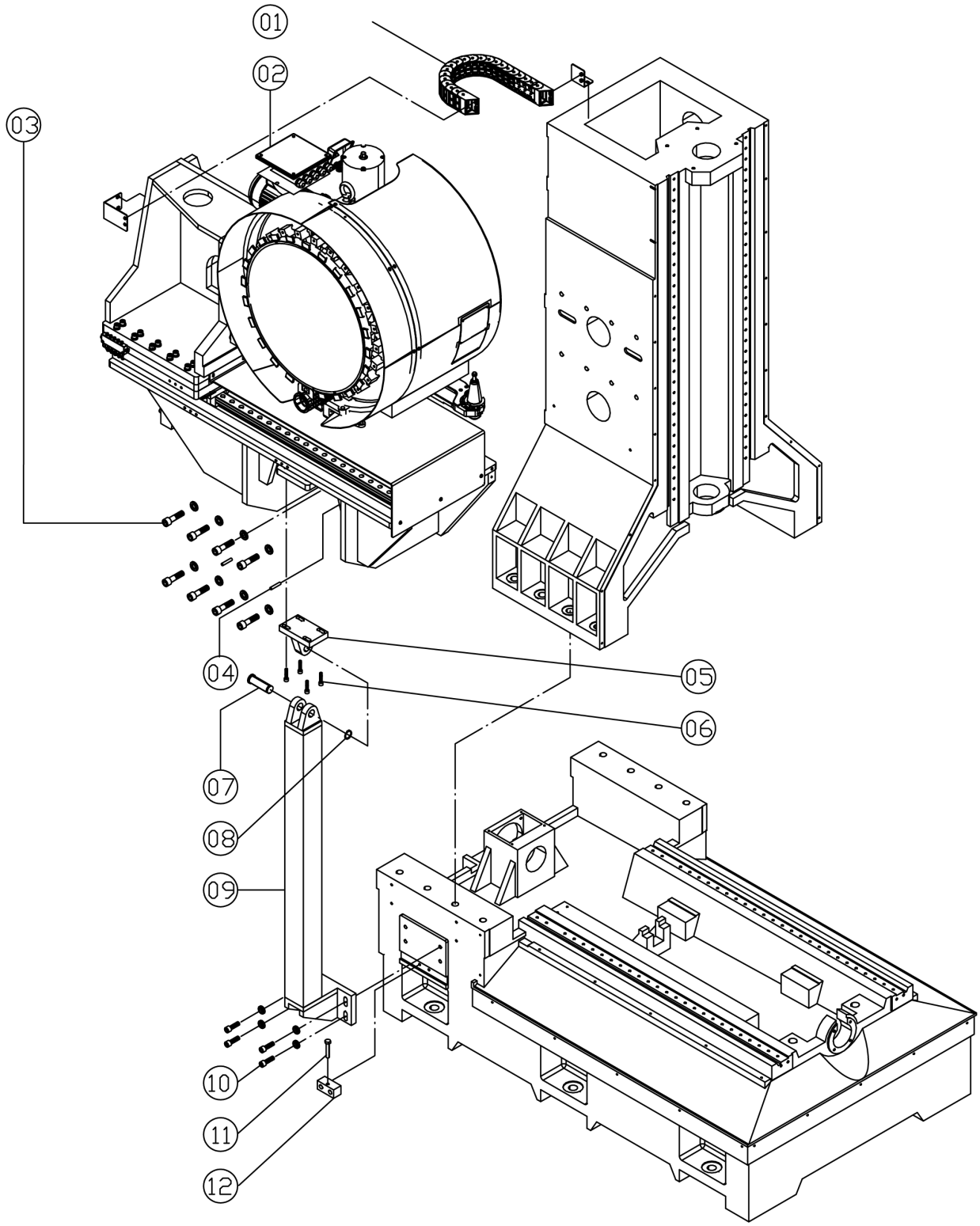
EM69P Part List

Spindle Head Assembly

	Part Number	Part Name	Specification	Qty	Remark
01		B-Axis Server Motor	BSM90N-1250	1	
02	8554010	Mount Block		1	
03		Adaptor	5540	4	
04		Cap screw	M12x1.75Px45L	6	
05		Gear Reducer	5538A	1	
06		Cap screw	5/16-18UNC-1.18"	16	
07		Lower Cover		4	
08		Button Head Cap Screws	1/4-20UNC-0.375"	1	
09		Spindle Motor Mount	5541	4	
10		Cap screw	5/16-18UNC-1.38"	1	
11		Built in Spindle		1	
12		Cap screw	M10x1.5Px40L	8	
13		Spindle Cover		1	
14		Shaft		1	
15		Connector		1	
16		Cylinder		1	
17		Cable Chain Bracket	5544A	1	
18		Cap screw	M6x1Px16L	4	
19		Cap screw	5/16-18UNC-2.25"	3	
20		Upper Cylinder Pivot Mount		1	
21		Cap screw	1/4-20UNC-0.375"	6	
22		Cover	5544	3	
23		Cap screw	M6x1Px16L	4	
24		Cable Chain Bracket		1	
25		Cap screw	M6x1Px16L	4	
26	8540260	Cable Chain		4	

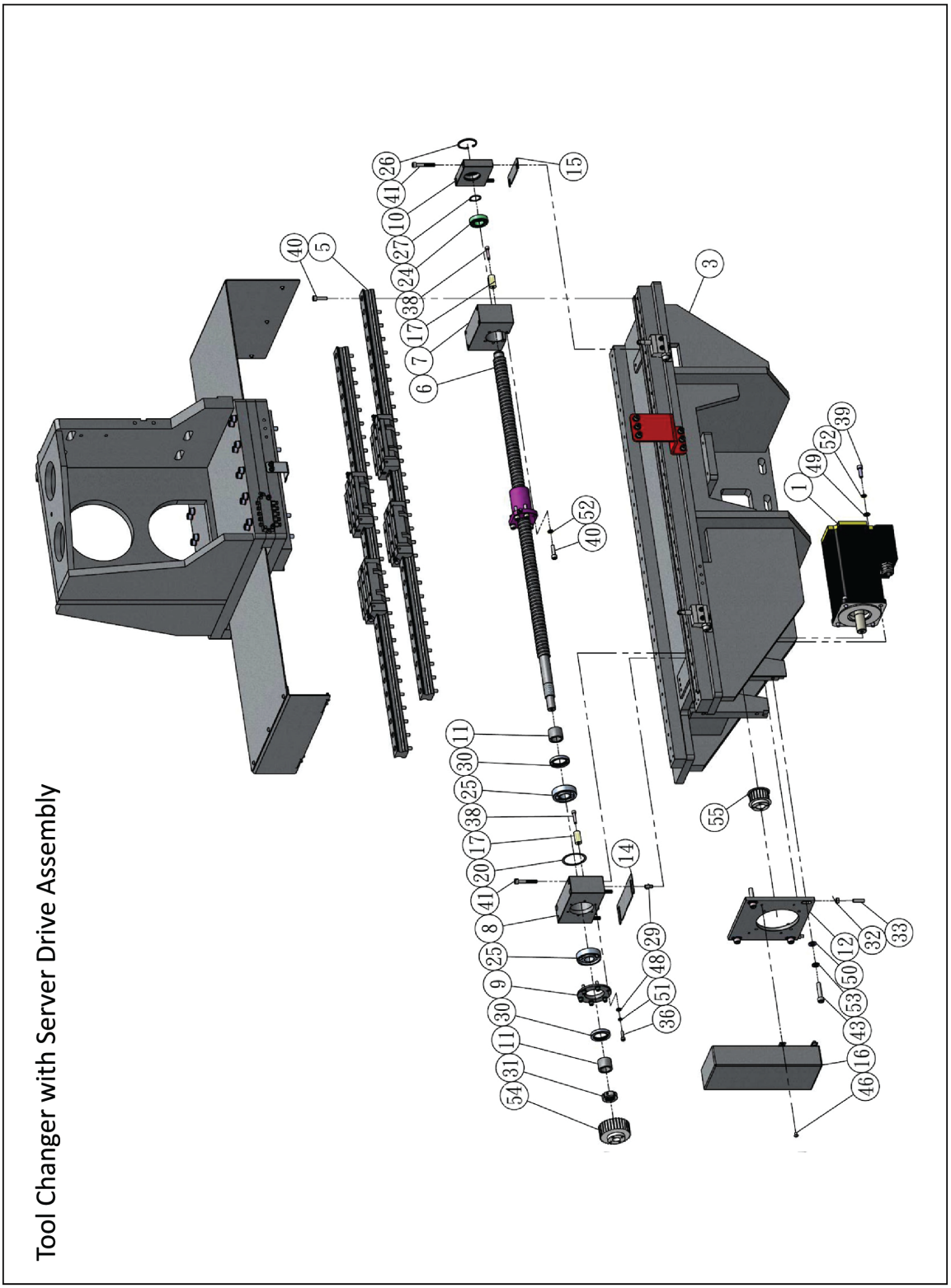
Tool Changer Assembly Parts

EM69P (Tool Changer System Assembly)



EM69P Part List					
Tool Changer System Assembly					
	Part Number	Part name	Specification	Qty	Remark
01	8560160	Cable Chain	SQ303-I-KR100-L1020-NO2	1	
02	GR0003-DK40#CAT24T-0	Tool Changer System	CAT40 - 24Tool	1 Set	
03		Cap Screw	M16x2.0Px55L	8	
04		Location Pin	φ 8X40L	2	
05	8560110	Connector Plate		1	
06		Cap Screw	M8x1.25Px35L	4	
07	8560120	Shaft		1	
08		Retaining Rings-C Type	S25	1	
09	8560100	Tool Changer Support		1	
10		Cap Screw	M12x1.75Px40L	4	
11		Hex Head Bolt	M10X1.5PX60L	1	
12	MV13440160	Adjustment Block		1	

Tool Changer Server Drive Assembly Parts


Tool Changer with Server Drive Assembly
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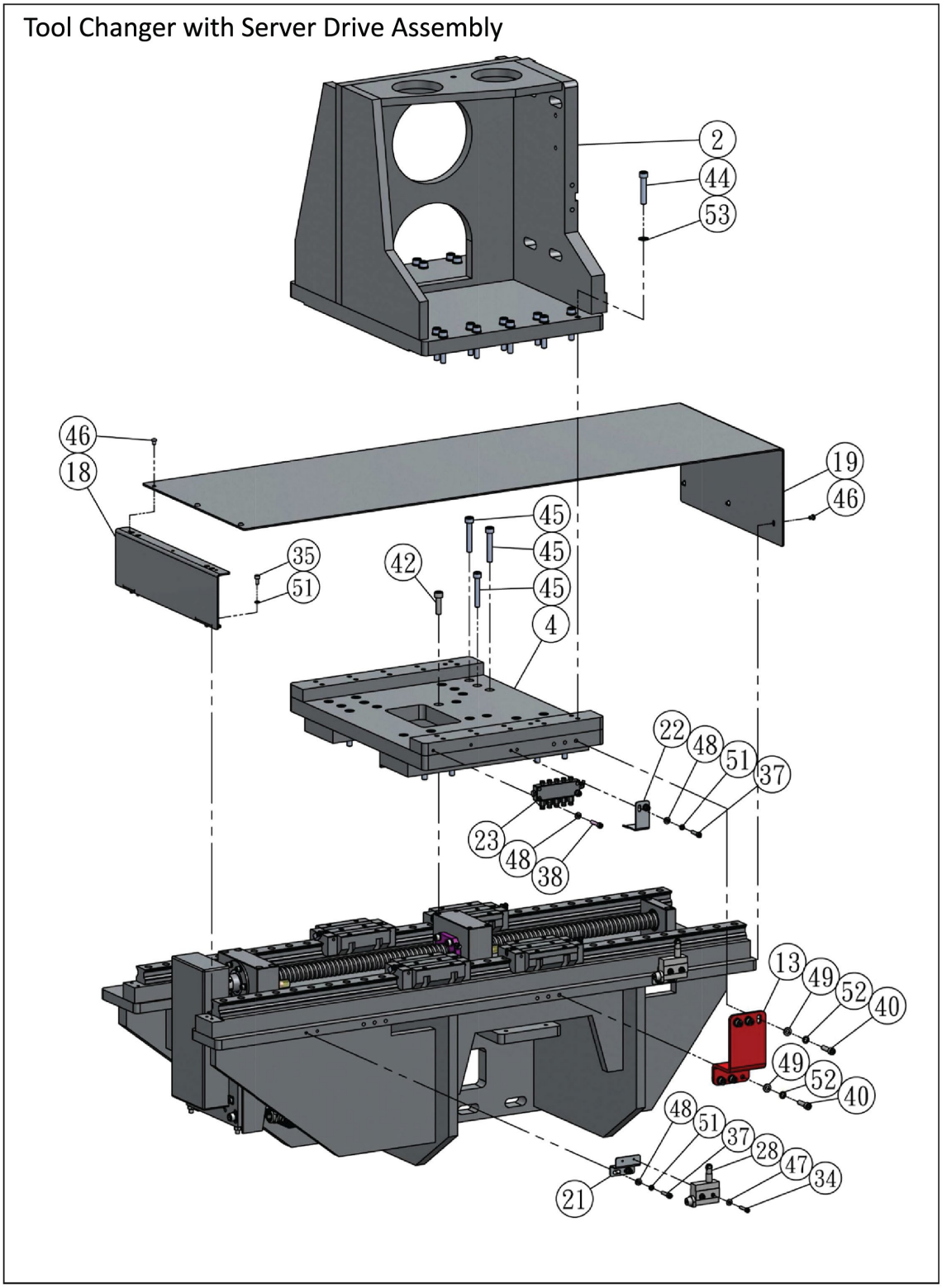
Tool Changer with Server Drive Assembly



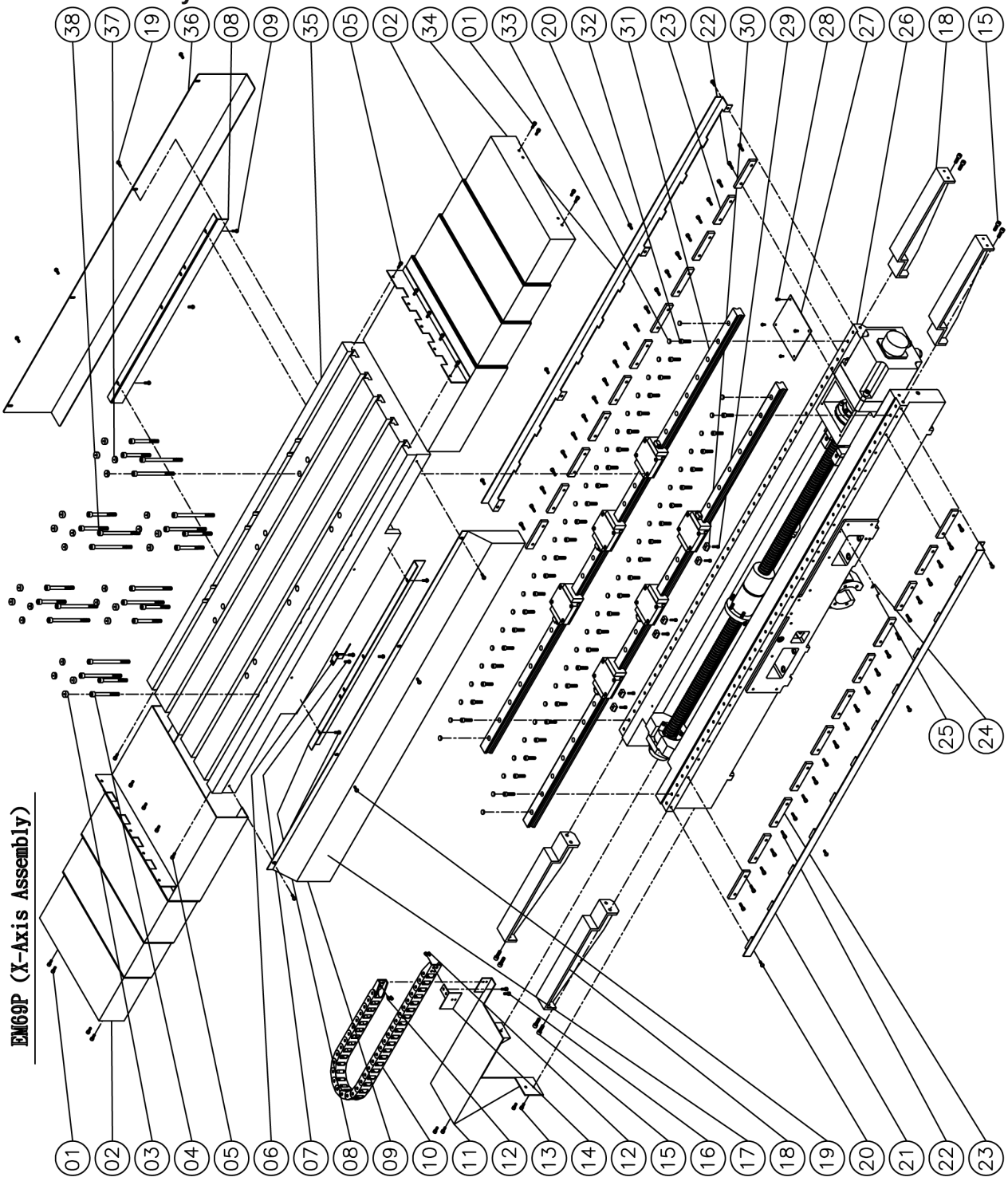
EM69P Part List

Tool Changer With Server Drive Assembly

	Part Number	Part Name	Specification	Qty	Remark
01		Server Motor		1	
02	DF0173301	Tool Changer Mount Block		1	
03	DF0173401	Bracket		1	
04	DF0173501	Slide Block		1	
05	DG0101901	Linear Guideway	MAR35LE 1195L	2	
06	DG0102001	Ballscrew	FSIN3210 1053L	1	
07	DG0102101	Ballscrew Nut Housing		1	
08	DG0102201	Bearing Housing		1	
09	DG0102301	Push Plate		1	
10	DG0102401	Bearing Housing		1	
11	DG0102501	Spacer		2	
12	DG0102601	Motor Adaptor		1	
13	DG0102701	Shipping Plate		1	
14	DG0102801	Shim A		1	
15	DG0102901	Shim B		1	
16	DG0103001	Cover		1	
17	DG0103101	Bumper		4	
18	DG0103201	Bracket		1	
19	DG0103301	Ballscrew Cover		1	
20	DG0103501	Shim Ring		1	
21	DG0103601	Limit Switch Bracket		2	
22	DG0103701	Cam		1	
23	DB-6A	Grease Nipple Distributor		1	
24	BA6005-J-020	Bearing	BA6005(NACHI)	1	
25	BA7305B	Bearing	BA7305B	2	
26	CI047	Retaining Ring-C Type	R47	1	

27	CO025	Retaining Ring-C Type	S25	1	
28	LM-CT-7311	Limit Switch		2	
29	PIN0820	Pin	Ø8x20L	2	
30	TC03505008	Oil Seal	35x50x8	2	
31	YSRM2515	Luck Nut	M25x1.5P	1	
32	M08125008	NUT	M8x1.25Px8L	2	
33	MA08125030	Set Ccrew	M8x1.25Px30L	2	
34	MI05080025	Cap Screw	M5x0.8Px25L	4	
35	MI06100012	Cap Screw	M6x1.0Px12L	4	
36	MI06100020	Cap Screw	M6x1.0Px20L	6	
37	MI06100025	Cap Screw	M6x1.0Px25L	6	
38	MI06100030	Cap Screw	M6x1.0Px30L	6	
39	MI08125025	Cap Screw	M8x1.25Px25L	4	
40	MI08125030	Cap Screw	M8x1.25Px30L	72	
41	MI08125050	Cap Screw	M8x1.25Px50L	6	
42	MI10150035	Cap Screw	M10x1.5Px35L	4	
43	MI10150045	Cap Screw	M10x1.5Px45L	4	
44	MI10150055	Cap Screw	M10x1.5Px55L	20	
45	MI10150060	Cap Screw	M10x1.5Px60L	24	
46	MR06100008	Button Head Cap Screw	M6*1.0P*8L	10	
47	W05	Washer	M5	4	
48	W06	Washer	M6	14	
49	W08	Washer	M8	10	
50	W10	Washer	M10	4	
51	WS06	Speing Washer	M6	16	
52	WS08	Speing Washer	M8	16	
53	WS10	Speing Washer	M10	24	
54	EM-303A	Pulley	8Mx32T	1	
55	DL-1018B	Pulley	8Mx20T	1	

X-Axis Assembly Parts



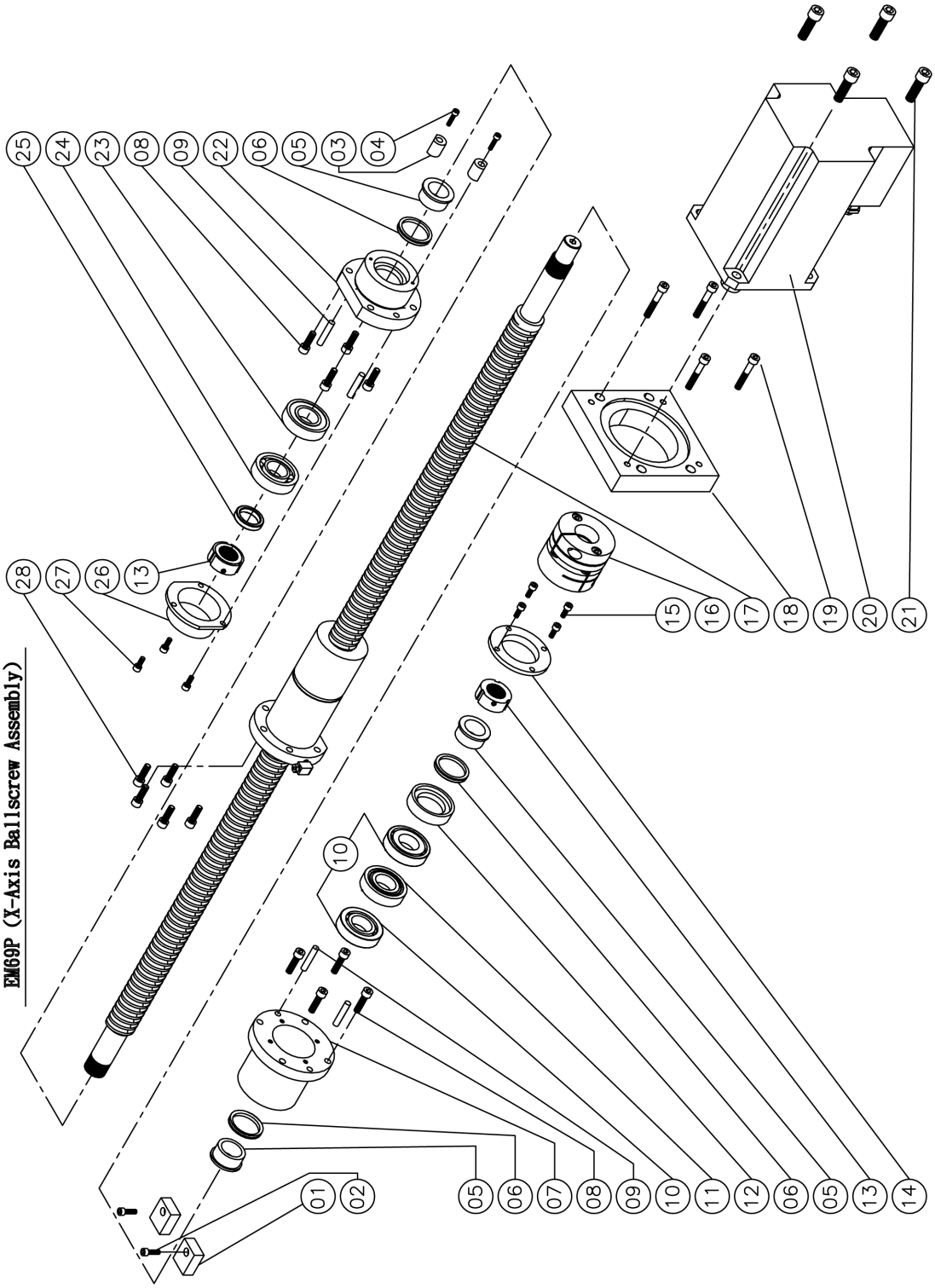
EM69P Part List

X-Axis Assembly

	Part Number	Part name	Specification	Qty	Remark
01		Cap Screw	M6x1Px16L	8	
02	10521220	X Telescopic Covers		2	
03	7520251	Copper Bolt Cap		12	
04		Cap Screw	M10x1.5Px95L	12	
05		Cap Screw	M6x1Px20L	10	
06	10520340	Origin Indicator		1	
07		Cap Screw	M6x1Px14L	2	
08	10520331	Guideway Cover		2	
09		Cap Screw	M6x1Px14L	6	
10		Cable Chain	SQ603xIIIxKR75x1020L	1	
11	10520200	Cable Chain Support		1	
12		Cap Screw	M5x0.8Px8L	4	
13		Cap Screw	M6x1Px14L	4	
14	10520211	Cable Chain Bracket		1	
15		Cap Screw	M8x1.25Px25L	8	
16		Cap Screw	M6x1Px14L	2	
17	10520250	Table Cover		1	
18	10520230	Telescopic Covers Bracket		4	
19		Button Head Cap Screws	M6x1Px14L	8	
20		Button Head Cap Screws	M6x1Px14L	8	
21	10520300	Guideway Cover		1	
22		Cap Screw	M6x1Px20L	44	
23	10531030	Push Plate		22	
24	CE-0050	Origin		1	
25		Rivet	⌀2x5L	2	
26	10531013	Saddle		1	

27	10520280	Plate		1	
28		Button Head Cap Screws	M5x0.8Px12L	4	
29		Cap Screw	M5x0.8Px16L	6	
30		Tapper Gib	T1	6	
31	10521021	Linear Guideway		2	
32		Cap Screw	M8x1.25Px35L	90	
33		Bolt Cap	C8	98	
34	10520310	Guideway Cover		1	
35	10521010	Table		1	
36	10521320	Table Cover		1	
37	7520251	Copper Bolt Cap		12	
38		Cap Screw	M10x1.5Px145L	12	

X-Axis Ballscrew Assembly Parts

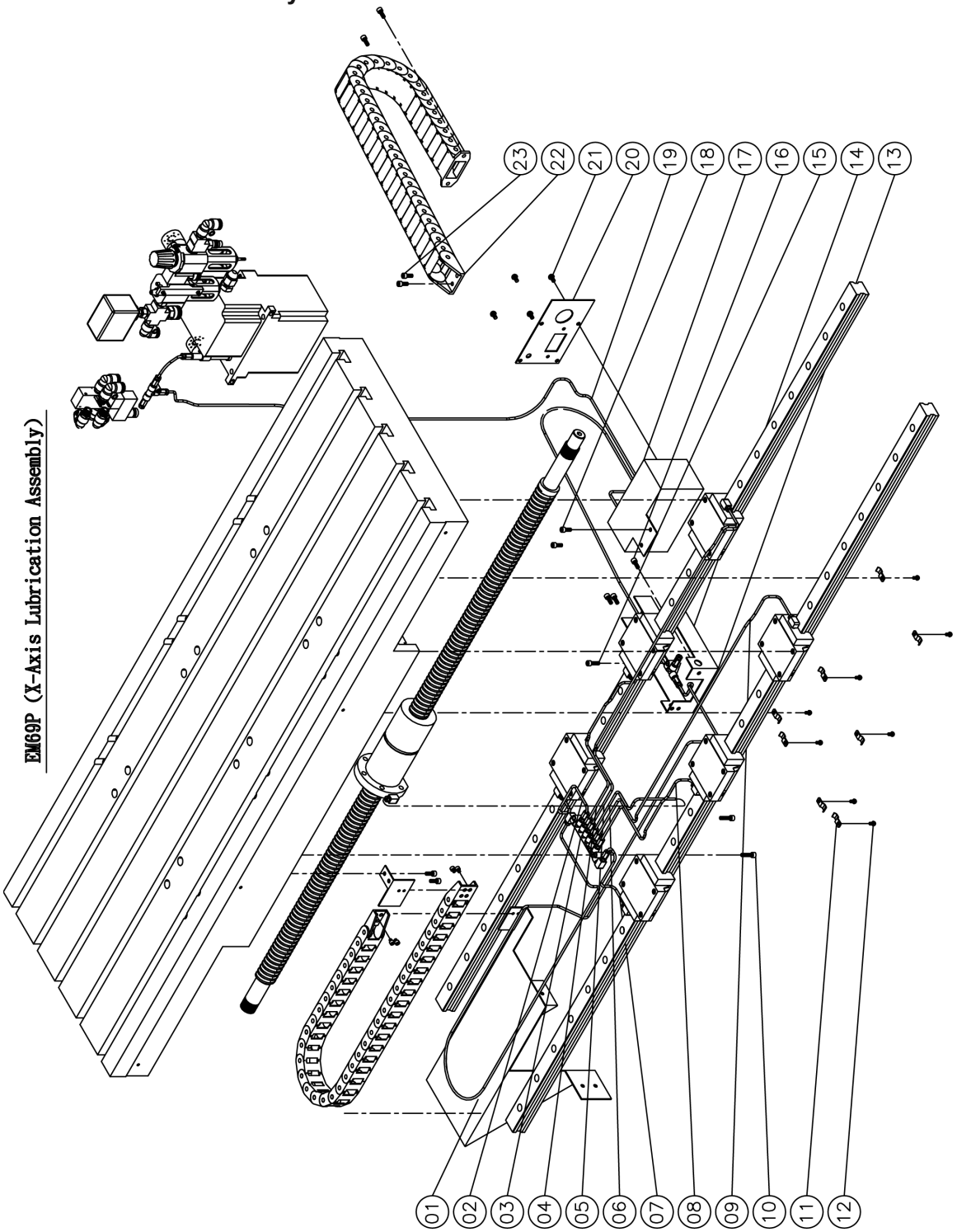


EM69P Part List

X-Axis Ballscrew Assembly

	Part Number	Part Name	Specification	Qty	Remark
01	7530070	Bumper		2	
02		Cap Screw	M6x1Px20L	2	
03	7520171	Bumper		2	
04		Cap Screw	M5x0.8Px20L	2	
05	8521090	Spacer		3	
06		Oil Seal	V-40A	3	
07	7520032	Bearing Housing		1	
08		Cap Screw	M8x1.25Px30L	8	
09		Location Pin	⌀8x40L	4	
10	Q-30TAC62C	Bearing	30TAC62C(DB)	2	
11	8521190	Spacer		1	
12	7520051	Spacer		1	
13		Lock Nut	YSF30-M30x1.5P	2	
14	7520062	Push Plate		1	
15		Cap Screw	M6x1Px16L	4	
16	8541120	Coupling		1	
17	1052040	X-Axis Ballscrew		1	
18	8520120	Motor Adaptor		1	
19		Cap Screw	M8x1.25Px50L	4	
20		Server Motor	BSM100C-3150	1	
21		Cap Screw	M12x1.75Px40L	4	
22	8521081	Bearing Housing		1	
23	Q-6206Z	Bearing	6206Z	1	
24	Q-7206BW	Bearing	7206BW	1	
25	MV13200080	Spacer		1	
26	MV13200110	Cover		1	
27		Cap Screw	M6x1Px12L	3	
28		Cap Screw	M8x1.25Px25L	5	

X-Axis Lubrication Assembly Parts

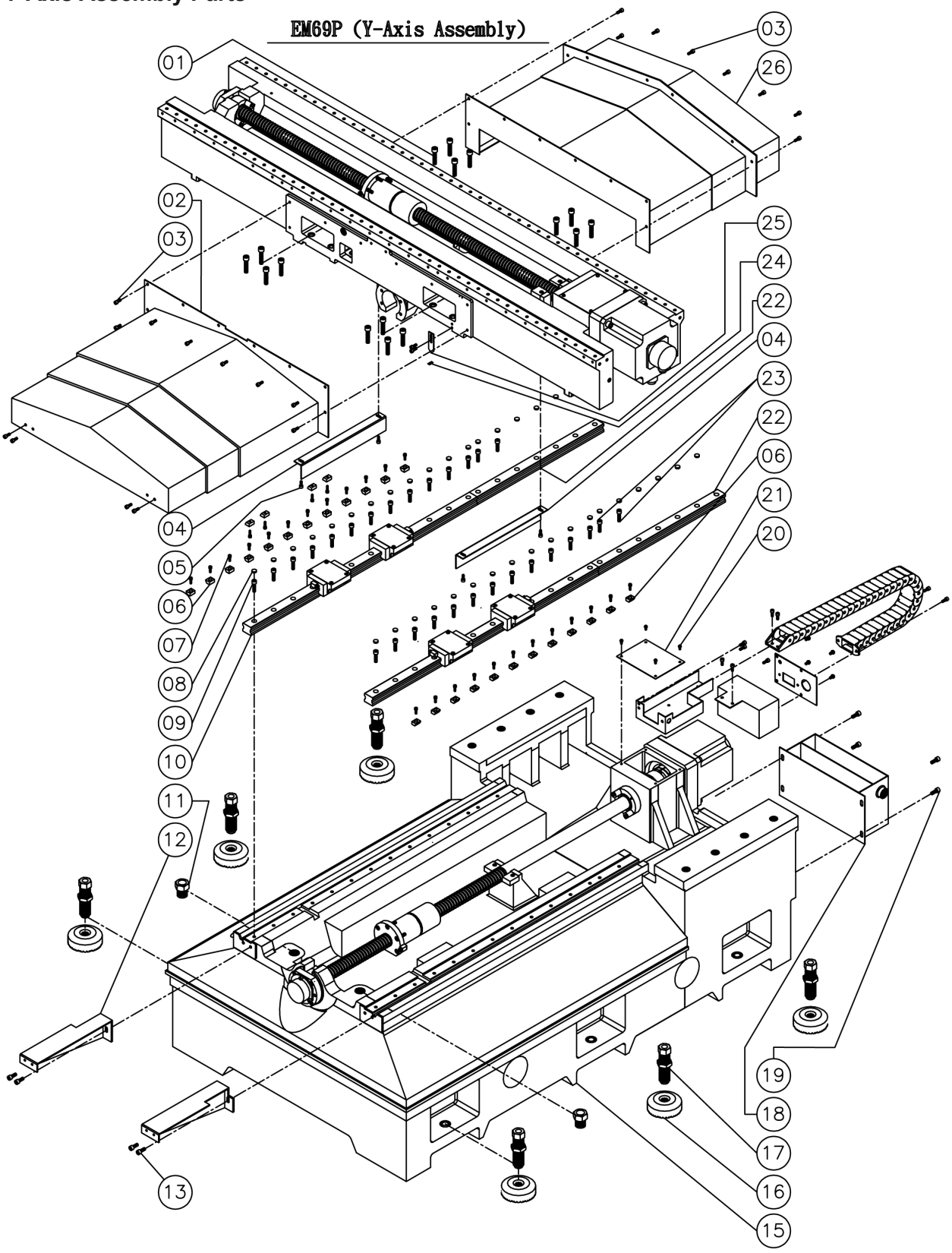


EM69P Part List

X-Axis Lubrication Assembly

	Part Number	Part Name	Specification	Qty	Remark
01		Nylon Pipe	⌀4x2400L	1	
02		Nylon Pipe	⌀4x280L	1	
03	EM-154-29	Volume Distributor		1	
04		Nylon Pipe	⌀4x480L	1	
05		Nylon Pipe	⌀4x940L	1	
06		Nylon Pipe	⌀4x315L	1	
07		Nylon Pipe	⌀4x250L	1	
08		Nylon Pipe	⌀4x460L	1	
09		Nylon Pipe	⌀4x930L	1	
10		Cap Screw	M6x1Px25L	2	
11		Pipe Clamps	⌀4	8	
12		Button Head Cap Screws	M5x0.8Px12L	8	
13	7530242	Cable Chain Bracket		1	
14	EM-154-17	3 Way Junction		1	
15		Cap Screw	M6x1Px25L	1	
16		Cap Screw	M6x1Px16L	3	
17	7530172	Cable Chain Bracket		1	
18		Cap Screw	M6x1Px16L	2	
19		Nylon Pipe	⌀4x2700L	1	
20	7530172-1	Plate		1	
21		Button Head Cap Screws	M6x1Px12L	4	
22	7530150	Cable Chain	SQ303-I-KR100-850L-No1	1	
23		Cap Screw	M6x1Px14L	4	

Y-Axis Assembly Parts

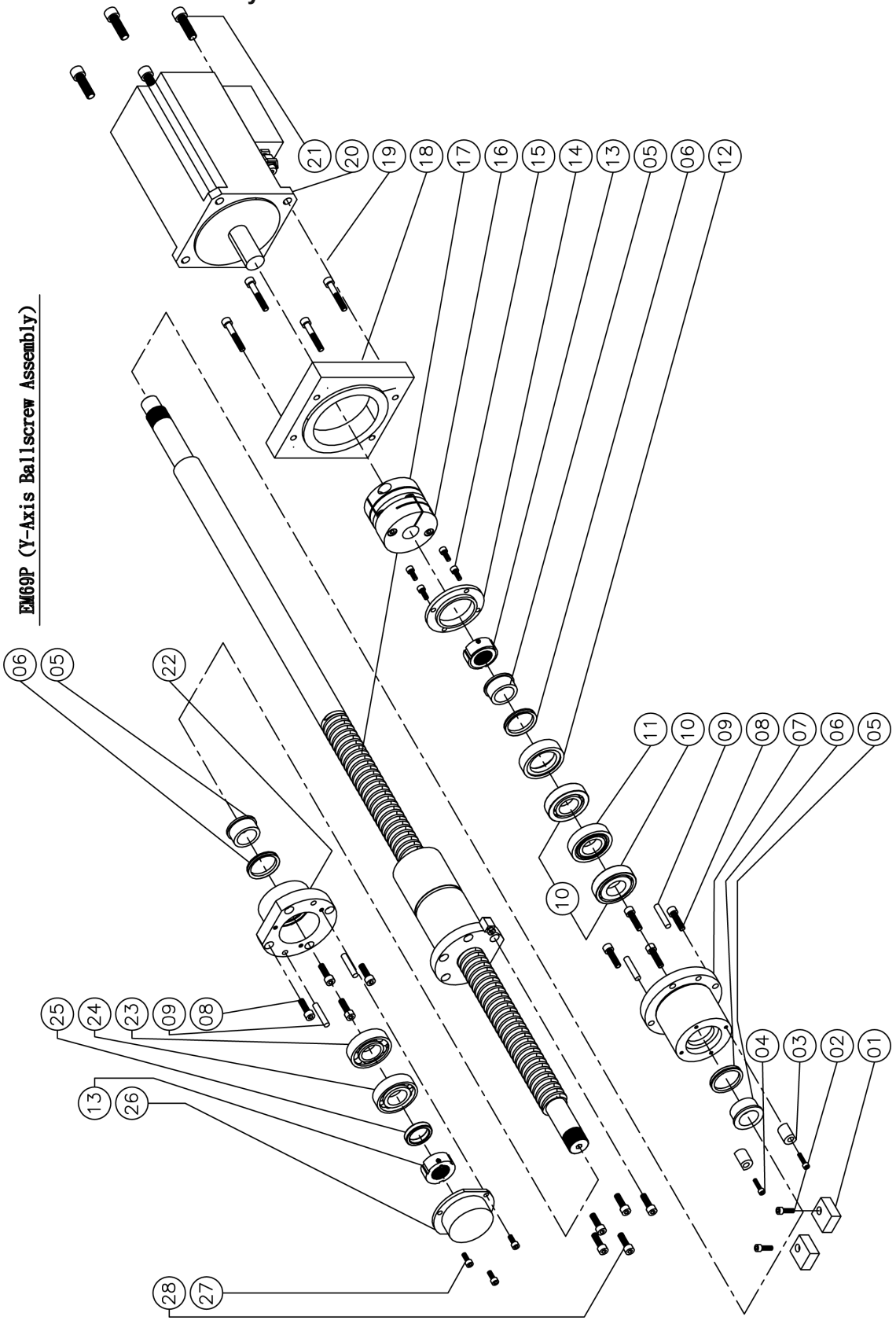


EM69P Part List

Y-Axis Assembly

	Part Number	Part Name	Specification	Qty	Remark
01		Cap Screw	M10x1.5Px45L	16	
02	7530112	Y Telescopic Cover(Front)		1	
03		Cap Screw	M6x1Px16L	16	
04	8520391	Cover		2	
05		Cap Screw	M6x1Px16L	4	
06		Tapper Gib	T1	46	
07		Cap Screw	M5x0.8Px16L	46	
08		Bolt Cap	C8	60	
09		Cap Screw	M8x1.25Px30L	24	
10	7531020	Linear Guideway		2	
11		Hex Head Bolt	M30x3.5Px25L	2	
12	7530123	Telescopic Cover Bracket		1 set	
13		Cap Screw	M8x1.25Px20L	4	
14					
15	7531033	Base		1	
16	ECL-10600	Leveling pads		6	
17	7530280	Leveling bolts		6	
18	7530061	Oil/Water Separating Tank		1	
19		Cap Screw	M8x1.25Px20L	4	
20		Button Head Cap Screws	M5x0.8Px12L	4	
21	7520100	Plate		1	
22	7531180	Linear Guideway		2	
23		Cap Screw	M8x1.25Px30L	4	
24	CE-0050	Origin		1	
25	7530221	Origin Indicator		1	
26	7530132	Y Telescopic Cover(Behind)		1	

Y-Axis Ballscrew Assembly Parts



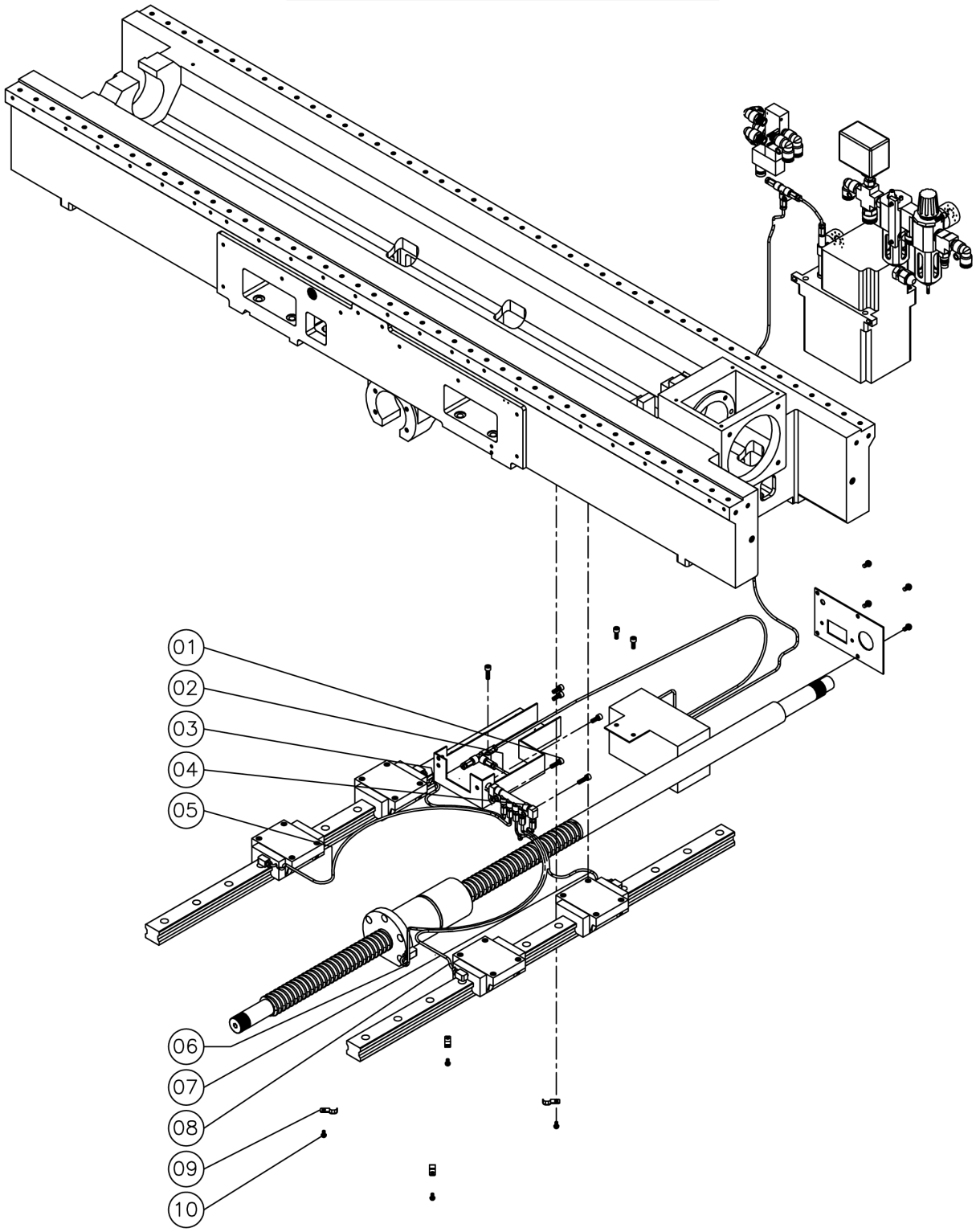
EM69P Part List

Y-Axis Ballscrew Assembly

	Part Number	Part Name	Specification	Qty	Remark
01	7530070	Bumper		2	
02		Cap Screw	M6x1Px20L	2	
03	7520171	Bumper		2	
04		Cap Screw	M5x0.8Px20L	2	
05	8521090	Spacer		3	
06		Oil Seal	V-40A	3	
07	7520032	Bearing Housing		1	
08		Cap Screw	M8x1.25Px30L	8	
09		Location Pin	⌀8x40L	4	
10	Q30TAC62C	Bearing	30TAC62C(DB)	2	
11	8521190	Spacer		1	
12	7520051	Spacer		1	
13		Lock Nut	YSF30-M30x1.5P	2	
14	7520062	Push Plate		1	
15		Cap Screw	M6x1Px16L	4	
16	8541120	Coulping		1	
17	7531040	Y-Axis Ballscrew		1	
18	8520120	Adaptor		1	
19		Cap Screw	M8x1.25Px50L	4	
20		Server Motro	BSM100C-3150	1	
21		Cap Screw	M12x1.75Px40L	4	
22	8521081	Bearing Housing		1	
23	Q-6206Z	Bearing	6206Z	1	
24	Q-7206BW	Bearing	7206BW	1	
25	MV13200080	Spacer		1	
26	MV13200110	Cover		1	
27		Cap Screw	M6x1Px12L	3	
28		Cap Screw	M8x1.25Px25L	5	

Y-Axis Lubrication Assembly Parts

EM69P (Y-Axis Lubrication Assembly)

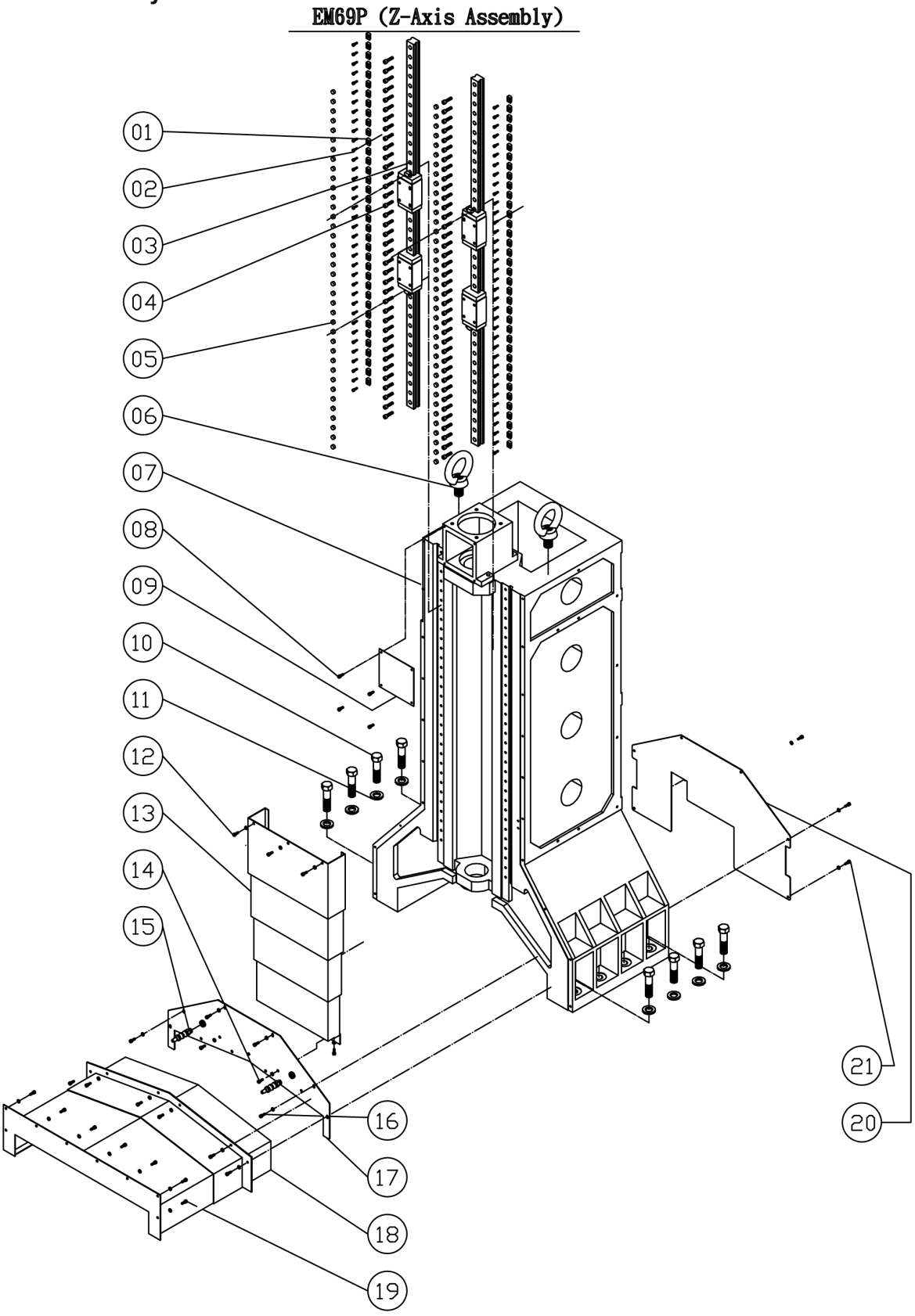


EM69P Part List

Y-Axis Lubrication Assembly

	Part Number	Part Name	Specification	Qty	Remark
01		Cap Screw	M6x1Px25L	2	
02		Nylon Pipe	⌀4x130L	1	
03		Nylon Pipe	⌀4x300L	1	
04	EM-154-16	Volume Distributor		1	
05		Nylon Pipe	⌀4x650L	1	
06		Nylon Pipe	⌀4x720L	1	
07		Nylon Pipe	⌀4x300L	1	
08		Nylon Pipe	⌀4x650L	1	
09		Pipe Clamps		4	
10		Button Head Cap Screws	M5x0.8Px12L	4	

Z-Axis Assembly Parts

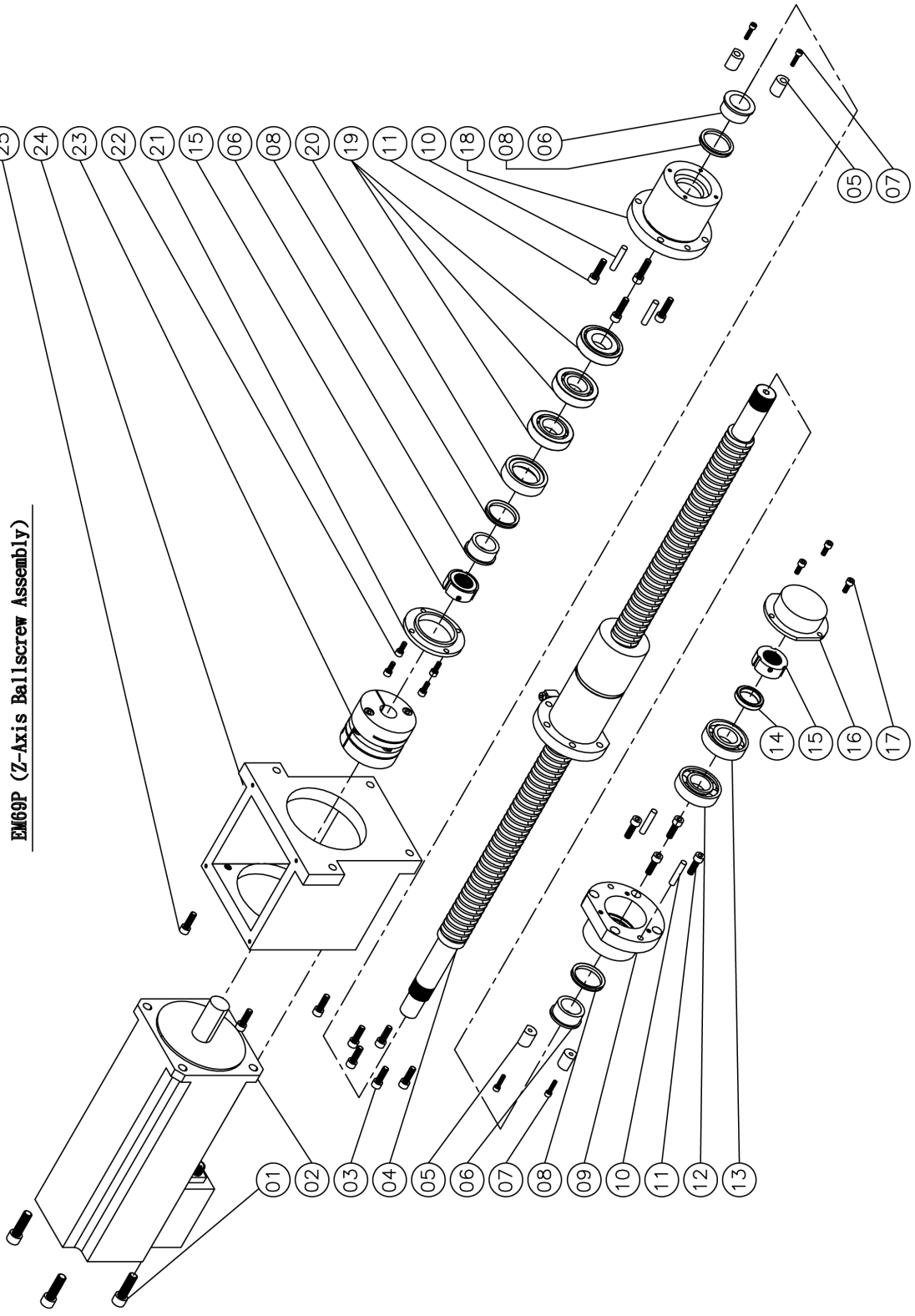


EM69P Part List

Z-Axis Assembly

	Part Number	Part Name	Specification	Qty	Remark
01		Tapper Gib	T1	74	
02		Cap Screw	M5x0.8Px16L	26	
03	8541022	Linear Guideway		1 Set	
04		Cap Screw	M8x1.25Px30L	76	
05		Bolt Cap	C8	26	
06		Lifting Eye Bolt	M30x3.5P	2	
07	8542011	Column		1	
08		Cap Screw	M5x0.8Px16L	4	
09		Plate		1	
10		Hex Head Bolt	M24x3Px90L	8	
11	7540150	Washer	M24	8	
12		Cap Screw	M6x1Px16L	5	
13	8542100	Z Telescopic Covers		1	
14		Cap Screw	M6x1.0Px16L	3	
15	7530290	Adjustable Hose		2	
16		Cap Screw	M6x1Px16L	4	
17	7540083	Cover		1	
18	7530132	Y Telescopic Covers(Behind)		1	
19		Cap Screw	M6x1Px16L	14	
20	7540200	Cover		1	
21		Cap Screw	M6x1Px16L	6	

Z-Axis Ballscrew Assembly Parts


EM69P (Z-Axis Ballscrew Assembly)
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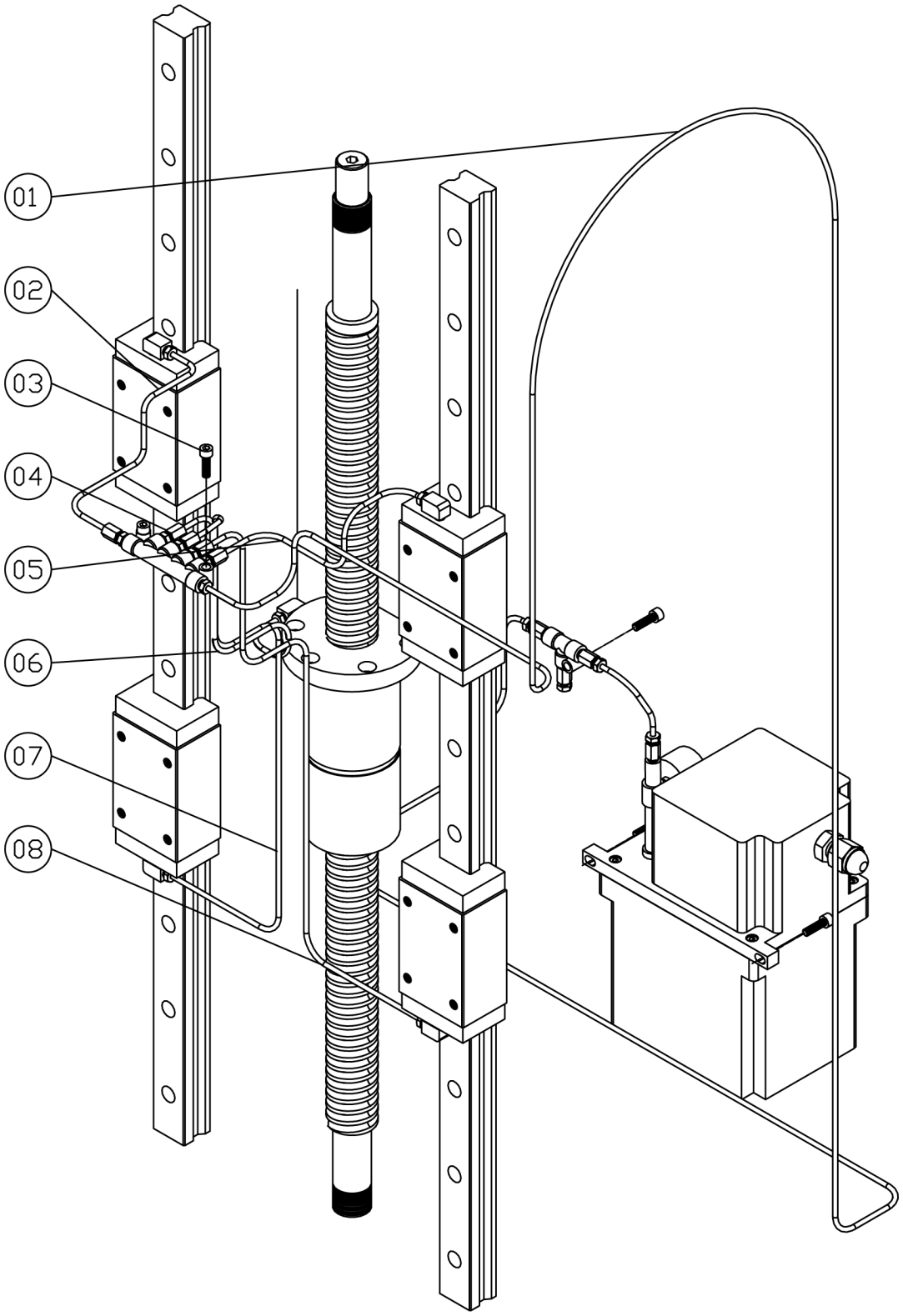
EM69P Part List

Z-Axis Ball Screw Assembly

	Part Number	Part Name	Specification	Qty	Remark
01		Cap Screw	M12x1.75Px40L	4	
02		Server Motor	BSM100C-4150-BB0	1	
03		Cap Screw	M8x1.25Px25L	5	
04	8542040	Z-Axis Ball Screw		1	
05	7520171	Bumper		4	
06	8521090	Spacer		3	
07		Cap Screw	M5x0.8Px20L	4	
08		Oil Seal	V-40A	3	
09	8521081	Bearing Housing		1	
10		Location Pin	⌀8x40L	4	
11		Cap Screw	M8x1.25Px30L	8	
12	Q-6206Z	Bearing	6206Z	1	
13	Q-7206BW	Bearing	7206BW	1	
14	MV13200080	Spacer		1	
15		Lock Nut	YSF30-M30x1.5P	2	
16	MV13200110	Cover		1	
17		Cap Screw	M6x1Px12L	3	
18	7520032	Bearing Housing		1	
19	Q-30TAC62C	Bearing	30TAC62C(DB)	3	
20	7520051	Spacer		1	
21	7520062	Push Plate		1	
22		Cap Screw	M6x1Px16L	4	
23	8541120	Coulping		1	
24	EFL-31040	Motor mount		1	
25		Cap Screw	M10x1.5Px45L	4	

Z-Axis Lubrication Assembly Parts

EM69P (Z-Axis Lubricaton Assembly)



EM69P Part List

Z-Axis Lubrication Assembly

	Part Number	Part Name	Specification	Qty	Remark
01		Nylon Pipe	⌀4x3800L	1	
02		Nylon Pipe	⌀4x270L	1	
03		Cap Screw	M6x1Px25L	2	
04	EM-154-15	Volume Distributor		1	
05		Nylon Pipe	⌀4x290L	1	
06		Nylon Pipe	⌀4x350L	1	
07		Nylon Pipe	⌀4x540L	1	
08		Nylon Pipe	⌀4x540L	1	

SDS

The Safety Data Sheets list shown in this section are the substances and materials that an operator is most likely to come in contact with while using this machine.

Other substances and materials are used in the manufacture, testing, and shipping of this machine. A complete list of the Safety Data Sheets of substances and materials used by Rottler Manufacturing during manufacturing, testing, and shipping is located on the Manual flash drive shipped with the machine. Safety Data Sheets are also located on the company web site: http://www.rottlermfg.com/documentation.php

1) Phillips 66 CP Oil

2) Dyna Cool K-2002

3) Mobil Vactra Oil #2

4) Valvoline High Performance Gear Oil

5) Valvoline Synpower Synthetic Oil

6) Molywhite #00 Grease

Safety Data Sheet

According to OSHA HCS 2012 (29 CFR 1910.1200), Health Canada HPR (SOR/2015-17), and Mexico NOM-018-STPS-2015

SECTION 1: Identification

Product Identifier	**CP Oil**
Other means of identification	Phillips 66 CP Oil 22 Phillips 66 CP Oil 32
Code	**LBPH817726**
Relevant identified uses	Industrial Oil
Uses advised against	All others
24 Hour Emergency Phone Number	CHEMTREC: 1-800-424-9300 CHEMTREC México 01-800-681-9531

Manufacturer/Supplier
Phillips 66 Lubricants
P.O. Box 4428
Houston, TX 77210

SDS Information
URL: www.phillips66.com/SDS
Phone: 800-762-0942
Email: SDS@P66.com

Customer Service
U.S.: 800-368-7128 or International: 1-832-765-2500

Technical Information
1-877-445-9198

SECTION 2: Hazard identification

Classified Hazards

No classified hazards

Hazards Not Otherwise Classified (HNOC)

PHNOC: None known
HHNOC: None known

Label elements

No classified hazards

SECTION 3: Composition/information on ingredients

Chemical Name	CASRN	Concentration
Distillates, petroleum, hydrotreated heavy paraffinic	64742-54-7	>95

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

SECTION 4: First aid measures

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

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

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

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

Most important symptoms and effects, both acute and delayed: 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. Prolonged or repeated contact may dry skin and cause irritation.

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

SECTION 5: Firefighting measures

NFPA 704: National Fire Protection Association

Health: 0 **Flammability:** 1 **Instability:** 00 =

minimal hazard
1 = slight hazard
2 = moderate hazard
3 = severe hazard
4 = extreme hazard

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.

Specific hazards arising from the chemical

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.

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.

Special protective actions for fire-fighters: 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 the hazard area and deny entry to unnecessary and unprotected personnel. 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.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

SECTION 6: Accidental release measures

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

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

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

SECTION 7: Handling and storage

Precautions for safe handling: Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8). Spills will produce very slippery surfaces. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

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

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

SECTION 8: Exposure controls/personal protection

Occupational exposure limits
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

Chemical Name	ACGIH	OSHA	Mexico	Phillips 66
Distillates, petroleum, hydrotreated heavy paraffinic	TWA: 5mg/m^3 STEL: 10 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.

Biological occupational exposure limits

Note: This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

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/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals.

Skin/Hand Protection: The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of gloves or other appropriate skin protection whenever working with chemicals. Suggested protective materials: Nitrile rubber

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

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in

oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

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

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

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to be specifications.

Appearance: Amber, Transparent

Physical Form: Liquid
Odor: Petroleum
Odor Threshold: No data
pH: Not applicable
Vapor Density (air=1): >1
Upper Explosive Limits (vol % in air): No data
Lower Explosive Limits (vol % in air): No data
Evaporation Rate (nBuAc=1): No data
Particle Size: Not applicable
Percent Volatile: No data
Flammability (solid, gas): Not applicable
Solubility in Water: Negligible

Flash Point: > 302 °F / > 150 °C

Test Method: Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
Initial Boiling Point/Range: No data
Vapor Pressure: <1 mm Hg
Partition Coefficient (n-octanol/water) (Kow): No data
Melting/Freezing Point: < -11 °F / < -24 °C
Auto-ignition Temperature: No data
Decomposition Temperature: No data
Specific Gravity (water=1): 0.86 @ 60ºF (15.6ºC)
Bulk Density: 7.1-7.2 lbs/gal
Viscosity: 4.0 - 6 cSt @ 100°C; 20.5 - 35 cSt @ 40°C
Pour Point: < -11 °F / < -24 °C

SECTION 10: Stability and reactivity

Reactivity: Not chemically reactive.

Chemical stability: Stable under normal ambient and anticipated conditions of use.

Possibility of hazardous reactions: Hazardous reactions not anticipated.

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

Incompatible materials: Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous decomposition products: Not anticipated under normal conditions of use.

SECTION 11: Toxicological information

Information on Toxicological Effects

Substance / Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful		>5 mg/L (mist, estimated)
Dermal	Unlikely to be harmful		> 2 g/kg (estimated)
Oral	Unlikely to be harmful		> 5 g/kg (estimated)

Likely Routes of Exposure: Inhalation, eye contact, skin contact

Aspiration Hazard: Not expected to be an aspiration hazard

Skin Corrosion/Irritation: Not expected to be irritating. Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/Irritation: Not expected to be irritating.

Skin Sensitization: No information available on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification).

Respiratory Sensitization: No information available.

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure.

Carcinogenicity: No information available on the mixture, however none of the components have been classified for carcinogenicity (or are below the concentration threshold for classification).

Germ Cell Mutagenicity: No information available on the mixture, however none of the components have been classified for

germ cell mutagenicity (or are below the concentration threshold for classification).

Reproductive Toxicity: No information available on the mixture, however none of the components have been classified for reproductive toxicity (or are below the concentration threshold for classification).

Information on Toxicological Effects of Components

Distillates, petroleum, hydrotreated heavy paraffinic

Carcinogenicity: This oil has been highly refined by a variety of processes to reduce aromatics and improve performance characteristics. It meets the IP-346 criteria of less than 3 percent PAH's and is not considered a carcinogen by the International Agency for Research on Cancer.

SECTION 12: Ecological information

GHS Classification:
No classified hazards

Toxicity: All acute aquatic toxicity studies on samples of lubricant base oils show acute toxicity values greater than 100 mg/L for invertebrates, algae and fish. These tests were carried out on water accommodated fractions and the results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

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

Bioaccumulative Potential: Log Kow values measured for the hydrocarbon components of this material are greater than 5.3, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

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

Other adverse effects: None anticipated.

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 SDS 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: Transport information

U.S. Department of Transportation (DOT)
UN Number: Not regulated
UN proper shipping name: None
Transport hazard class(es): None
Packing Group: None
Environmental Hazards: This product does not meet the DOT/UN/IMDG/IMO criteria of a marine pollutant
Special precautions for user: 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)
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds)

6/6

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)
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

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

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

California Proposition 65

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

International 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.

SECTION 16: Other information

Issue Date:	Previous Issue Date:	SDS Number	Status:
17-Apr-2018	23-Jun-2016	LBPH817726	FINAL

Revised Sections or Basis for Revision:
Exposure limits (Section 8); Regulatory information (Section 15)

Legend (pursuant to NOM-018-STPS-2015):
The information within is considered correct but is not exhaustive and will be used for guidance only, which is based on the current knowledge of the substance or mixture and is applicable to the appropriate safety precautions for the product.

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; GHS = Globally Harmonized System; HPR = Hazardous Products Regulations; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

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

SAFETY DATA SHEET
DYNA COOL K-2002

Issue Date: 13-May-2015 **Revision Date:** 25-January-2018 **Version** 1

1. IDENTIFICATION

Product Identifier
Product Name DYNA COOL K-2002

Other means of identification
SDS # DYNA-004
Product Code 5428

Recommended use of the chemical and restrictions on use
Recommended use Metalworking fluid
Restrictions on use Industrial use only

Details of the supplier of the safety data sheet
Manufacturer Address
Company Name: DYNA TECH Chemical Specialties, Inc.
Address: P. O. Box 34
Colgate, WI 53017
Telephone: 262-646-7600
Fax: 262-820-9176

Emergency Telephone Number (24 hours/day): **INFOTRAC 1-352-323-3500 (International)** 1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Hazard Classification Not classified as hazardous under 29CFR 1910.1200 (HazCom 2012)

Label Elements

Hazard Symbol: No symbol.

Signal Word: No signal word.

Hazard Statement: Not applicable.

Precautionary Statement: Not applicable.

Other hazards which do not result in GHS classification: None.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component(s):

CHEMICAL NAME	CAS-NO.	CONCENTRATION
Mineral oil	Confidential	20 – 50%
Triethanolamine	102-71-6	5 – 10%
Ethoxylated alcohol	Confidential	1 – 5%
Biocide	Confidential	1 - 5%

Revision Date: 25-January-2018

Sodium hydroxide	1310-73-2	10 – 20%

Specific chemical identities and/or exact percentages have been withheld as trade secrets.

DYNA TECH Chemical Specialties, Inc.
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DYNA-004 – **DYNA COOL K-2002**

4. FIRST-AID MEASURES

Ingestion: Rinse mouth thoroughly. Call a POISON CENTER/doctor/…/ if you feel unwell. Do NOT induce vomiting.

Inhalation: Move to fresh air. Call a POISON CENTER/doctor/…/ if you feel unwell.

Skin Contact: Remove contaminated/saturated clothing and shoes. Wash contact areas with soap and water. If skin irritation occurs: Get medical advice/attention.

Eye Contact: Flush thoroughly with water. If irritation occurs, get medical assistance. Continue to rinse for at least 15 minutes.

Most important symptoms/effects, acute and delayed

Symptoms: No data available.

Indication of immediate medical attention and special treatment needed

Treatment: Get medical attention as appropriate or if symptoms persist.

5. FIRE-FIGHTING MEASURES

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, fog, CO_2, dry chemical or regular foam. Use fire-extinguishing media appropriate for surrounding materials.

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

Specific hazards arising from the chemical: Heat may cause the containers to explode. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Special firefighting procedures: No data available.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: See Section 8 of the SDS for Personal Protective Equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away. Ensure adequate ventilation.

Methods and material for containment and cleaning up: Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk.

Environmental Precautions: Avoid release to the environment. Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

7. HANDLING AND STORAGE

Revision Date: 25-January-2018

Precautions for safe handling:	End-users should follow industry best practices for handling and using this product. Guidance may be found using the current version of ASTM Standard E1497-05: Standard Practice for Selection and Safe Use of Water-Miscible and Straight Oil Metal Removal Fluids. Contains amines. Do not add sodium nitrite or other nitrosating agents which may form cancer causing nitrosamines. Contains a component that when heated at or above 300F (150C) may generate Formaldehyde vapors. Observe good industrial hygiene practices. Wear appropriate personal protective equipment. Do not expose to intense heat as product may expand and pressurize container.
Conditions for safe storage, including any incompatibilities:	Store in original tightly closed container. Avoid contact with oxidizing agents. Store away from incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

CHEMICAL NAME	TYPE	EXPOSURE LIMIT VALUES	SOURCE
Mineral oil - Mist.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Mineral oil – Mist.	STEL	10 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Triethanolamine	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (03 2012)
Sodium hydroxide	PEL	2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminate (29 CFR 1910-1000) (02 2006)
Sodium hydroxide	Ceiling	2 mf/m3	US. ACGIH Threshold Limit Values (03-2012)

Protective Measures: Use personal protective equipment as required.

Respiratory Protection: In case of inadequate ventilation, use suitable respirator. Seek advice from supervisor on the company's respiratory protection standards.

Eye Protection: Wear safety glasses with side shields (or goggles).

Skin and Body Protection: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Contaminated work clothing should be laundered prior to re-use. Discard contaminated footwear that cannot be cleaned. Avoid contact with skin, eyes, and clothing.

Revision Date: 25-January-2018

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state:	Liquid
Form:	No data available.
Color:	Blue
Odor:	Mild
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	Not applicable
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Relative density:	1.07
Solubility(ies)	
Solubility in water:	Soluble.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	> 20.5 mm2/s (40 °C)
Other Information	
VOC:	10.18 g/l (ASTM E 1868-10)

10. STABILITY AND REACTIVITY

Reactivity:	Not reactive during normal use.
Chemical Stability:	Material is stable under normal conditions.

DYNA-004 – **DYNA COOL K-2002**

Possibility of Hazardous Reactions:	None under normal conditions.
Conditions to Avoid:	Avoid heat or contamination**.**
Incompatible Materials:	No data available.
Hazardous Decomposition Products:	Formaldehyde

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Ingestion:	May be ingested by accident. Ingestion may cause irritation and malaise.
Inhalation:	Inhalation is the primary route of exposure. In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes.
Skin Contact:	Prolonged skin contact may cause redness and irritation.
Eye Contact:	Eye contact is possible and should be avoided.

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion:	No data available.
Inhalation:	No data available.
Skin Contact:	No data available.
Eye Contact:	No data available.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral Product:	ATEmix (): > 5000 mg/kg
Dermal Product:	ATEmix (): 2000-5000 mg/kg
Inhalation Product:	Not classified for acute toxicity based on available data.
Repeated Dose Toxicity Product:	No data available.

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Skin Corrosion/Irritation Product: No data available.

Serious Eye Damage/Eye Irritation Product: No data available.

Respiratory or Skin Sensitization Product: May cause an allergic skin reaction.

Carcinogenicity Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified.

U.S. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified.

U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified.

Germ Cell Mutagenicity

In Vitro Product: No data available.

In Vivo Product: No data available.

Reproductive Toxicity Product: No data available

Specific Target Organ Toxicity – Single Exposure Product: No data available

Specific Target Organ Toxicity – Repeated Exposure Product: No data available

Aspiration Hazard Product: No data available.

Other effects: No data available.

12. ECOLOGICAL INFORMATION

DYNA-004 – **DYNA COOL K-2002**

General information: This product has not been evaluated for ecological toxicity or other environmental effects.

13. DISPOSAL CONSIDERATIONS

Disposal instructions:

Discharge, treatment, or disposal may be subject to national, state, or local laws. Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. It is the responsibility of the product user or owner to determine at the time of disposal, which waste regulations, must be applied.

Contaminated Packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT Not regulated

IMDG Not regulated.

IATA Not regulated

15. REGULATORY INFORMATION

US Federal Regulations

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
None present or none present in regulated quantities.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard Categories
Not listed.

SARA 313 (TRI Reporting)
None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65
This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

16. OTHER INFORMATION

Issue Date: 13-May-2015
Revision Date: 25-January-2018
Revision Note: Updated information.
Version #: 1
Further Information: No data available.

DYNA-004 – **DYNA COOL K-2002**

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. This information should be used to make an independent determination of the methods to safeguard workers and the environment. 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.

END OF SAFETY DATA SHEET

Product Name: MOBIL VACTRA OIL NO. 2
Revision Date: 30 Aug 2018

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **MOBIL VACTRA OIL NO. 2**
Product Description: Base Oil and Additives
Product Code: 201560901015, 600494-85
Intended Use: Lubricant

COMPANY IDENTIFICATION

Supplier: **East Coast Lubes Pty Ltd (Queensland and Northern Territory)**
A.B.N. 37 117 203 611
Cnr North and Mort Streets
Toowoomba, Queensland 4350 Australia

24 Hour Emergency Telephone 1300 131 001
Supplier General Contact 1800 069 019

Supplier: **Southern Cross Lubes (Victoria and Tasmania, New South Wales and Australian Capital Territory)**
58-66 Ajax Road
Altona, Victoria 3018, Australia

24 Hour Emergency Telephone 1300 131 001
Product Technical Information 1300 466 245
Supplier General Contact 1300 552 861

Supplier: **Perkal Pty Ltd Trading as Statewide Oil (Western Australia)**
A.B.N. 43 009 283 363
14 Beete Street
Welshpool, Western Australia 6106 Australia

24 Hour Emergency Telephone (8:00am to 4:30pm Mon to Fri) 1300 919 904
Product Technical Information (08) 9350 6777
Supplier General Contact (08) 9350 6777

Supplier: **Perkal Pty Ltd Trading as Statewide Oil (South Australia)**
A.B.N. 43 009 283 363
6-10 Streiff Rd
Wingfield, South Australia 5013 Australia

Product Name: MOBIL VACTRA OIL NO. 2
Revision Date: 30 Aug 2018

24 Hour Emergency Telephone		1300 919 904
Product Technical Information	(8:00am to 4:30pm Mon to Fri)	
Supplier General Contact	(08) 8359 8995	
	(08) 8359 8995	

SECTION 2 HAZARDS IDENTIFICATION

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

Contains: PHOSPHORIC ACID ESTERS, AMINE SALT May produce an allergic reaction.

Other hazard information:

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.

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 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	GHS Hazard Codes
2,6-DI-TERT-BUTYL-P-CRESOL	128-37-0	0.1 - < 1%	H400(M factor 1), H410(M factor 1)

Product Name: MOBIL VACTRA OIL NO. 2
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PHOSPHORIC ACID ESTERS, AMINE SALT	Confidential	0.1 - < 1%	H227, H302, H317, H318, H401, H411

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. Other ingredients determined not to be hazardous up to 100%.

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.

NOTE TO PHYSICIAN

None

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 run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters 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.

Product Name: MOBIL VACTRA OIL NO. 2
Revision Date: 30 Aug 2018

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

FLAMMABILITY PROPERTIES

Flash Point [Method]: >205°C (401°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.

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 so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so 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

Product Name: MOBIL VACTRA OIL NO. 2
Revision Date: 30 Aug 2018

Large Spills: Dyke 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 earthing procedures. However, bonding and earthing 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 type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

Material is defined under the National Standard [NOHSC:1015] Storage and Handling of Workplace Dangerous Goods.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit/Standard			Note	Source
2,6-DI-TERT-BUTYL-P-CRESOL		TWA	10 mg/m3			Australia OELs

2,6-DI-TERT-BUTYL-P-CRESOL	Inhalable fraction and vapour	TWA	2 mg/m3			ACGIH

Exposure limits/standards for materials that can be formed when handling this product:

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

Biological limits

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:
Particulate
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/vapour 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:
Nitrile,Viton
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. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

Product Name: MOBIL VACTRA OIL NO. 2
Revision Date: 30 Aug 2018

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
Colour: Amber
Odour: Characteristic
Odour Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.883
Flammability (Solid, Gas): N/A
Flash Point [Method]: >205°C (401°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
Vapour Density (Air = 1): > 2 at 101 kPa
Vapour Pressure: < 0.013 kPa (0.1 mm Hg) at 20 ºC
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: 68 cSt (68 mm2/sec) at 40 ºC | 8.6 cSt (8.6 mm2/sec) at 100°C **Oxidizing Properties:** See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D **Melting Point:** N/A
Pour Point: -6°C (21°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.

INCOMPATIBLE MATERIALS: Strong oxidisers

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.
Sensitisation	
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 physicochemical 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)	

Product Name: MOBIL VACTRA OIL NO. 2
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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:

Component concentrations in this formulation would not be expected to cause skin sensitization, based on tests of the components, this formulation, or similar formulations.

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 sensitising in test animals.

IARC Classification:

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

--REGULATORY LISTS SEARCHED--

1 = IARC 1 2 = IARC 2A 3 = IARC 2B

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

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.

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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.

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 (ADG) : 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

This material is not considered hazardous according to Australia Model Work Health and Safety Regulations.

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Product is not regulated according to Australian Dangerous Goods Code.

No Poison Schedule number allocated by the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) established under the Therapeutic Goods Act.

AS1940 COMBUSTIBLE CLASS: C2

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

Listed or exempt from listing/notification on the following chemical inventories (May contain substance(s) subject to notification to the EPA Active TSCA inventory prior to import to USA): AICS, DSL, ENCS, IECSC, KECI, PICCS, TCSI, TSCA

SECTION 16 OTHER INFORMATION

KEY TO ABBREVIATIONS AND ACRONYMS:

N/D = Not determined, N/A = Not applicable, STEL = Short-Term Exposure Limit, TWA = Time-Weighted Average

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H227: Combustible liquid; Flammable Liquid, Cat 4
H302: Harmful if swallowed; Acute Tox Oral, Cat 4
H317: May cause allergic skin reaction; Skin Sensitization, Cat 1

H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Southern Cross Lubes (Victoria and Tasmania): Section 01: Supplier Mailing Address information was deleted.
Southern Cross Lubes (Victoria and Tasmania, New South Wales and Australian Capital Territory): Section 01: Supplier Mailing Address information was added.
Section 11 Acute Toxicity data - Header information was deleted.
Section 11 Substance Name - Header information was deleted.
Section 11 Substance Toxicity table - Header information was deleted.
Section 11 Substance Toxicology table information was deleted.
Section 12: information was modified.

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most

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current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly of indirectly hold any interest.

DGN: 7053124DAU (1014681)

Prepared by: Exxon Mobil Corporation
EMBSI, Clinton NJ USA
Contact Point: See Section 1 for Local Contact number

End of (M)SDS

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29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Valvoline™ High Performance SAE 80W-90 Gear Oil

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Relevant identified uses of the substance or mixture and uses advised against

Details of the supplier of the safety data sheet Valvoline LLC 3499 Blazer Parkway Lexington, KY 40509 United States of America (USA) 1-800-TEAMVAL	**Emergency telephone number** 1-800-VALVOLINE **Regulatory Information Number** 1-800-TEAMVAL **Product Information** 1-800-TEAMVAL

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SECTION 2. HAZARDS IDENTIFICATION :

GHS Classification

Skin sensitization : Category 1

GHS label elements

Hazard pictograms :

:

Signal Word : Warning

Hazard Statements : May cause an allergic skin reaction.

Precautionary Statements :

Prevention:
Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves.
Response:
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/ attention.
Wash contaminated clothing before reuse.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Defatter

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (%)
RESIDUAL OILS (PETROLEUM), SOLVENT-DEWAXED	64742-62-7	This material is not considered hazardous under the OSHA Hazard Communication Standard (HazCom 2012).	21.105
DISTILLATES (PETROLEUM), HYDROTREATED LIGHT	64742-47-8	Asp. Tox. 1; H304	1.393
AMINES, C12-14-TERT-ALKYL	68955-53-3	Flam. Liq. 4; H227 Acute Tox. 4; H302 Acute Tox. 2; H330 Acute Tox. 3; H311 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1A; H317	0.343

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SECTION 4. FIRST AID MEASURES

General advice :

Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled :

If breathed in, move person into fresh air.
If unconscious, place in recovery position and seek medical advice.

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If symptoms persist, call a physician.

In case of skin contact : Remove contaminated clothing. If irritation develops, get medical attention. If on skin, rinse well with water.
First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water.
Wash contaminated clothing before re-use.

In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
If eye irritation persists, consult a specialist.

If swallowed : Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed :

Acute aspiration of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Repeated aspiration of small quantities of mineral oil can produce chronic inflammation of the lungs (i.e. lipoid pneumonia) that may progress to pulmonary fibrosis. Symptoms are often subtle and radiological changes appear worse than clinical abnormalities. Occasionally, persistent cough, irritation of the upper respiratory tract, shortness of breath with exertion, fever, and bloody sputum occur. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.
Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:
stomach or intestinal upset (nausea, vomiting, diarrhea)
irritation (nose, throat, airways)
Headache
Dizziness
May cause an allergic skin reaction.

Notes to physician : No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water spray
Foam

Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing media	: High volume water jet
Specific hazards during firefighting	: Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	: carbon dioxide and carbon monoxide Hydrocarbons
Specific extinguishing methods	:

Product is compatible with standard fire-fighting agents.

Further information	: Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	: In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Use personal protective equipment. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
Environmental precautions	: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up	: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.
Other information	: Comply with all applicable federal, state, and local regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	: Do not breathe vapours/dust. Do not smoke. Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Container hazardous when empty.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage place.	: Keep container tightly closed in a dry and well-ventilated Containers which are opened must be carefully resealed and kept upright to prevent leakage.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
DISTILLATES (PETROLEUM), HYDROTREATED LIGHT	64742-47-8	TWA	5 mg/m3 Mist	OSHA Z-1
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
		TWA	5 mg/m3 Mist	OSHA P0
		TWA	5 mg/m3 Mist	NIOSH REL
		ST	10 mg/m3 Mist	NIOSH REL
		PEL	5 mg/m3 particulate	CAL PEL

Hazardous components without workplace control parameters

Components	CAS-No.
AMINES, C12-14-TERT-ALKYL	68955-53-3

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Respiratory protection : Respiratory protection is not required under normal conditions of use.

Hand protection

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection	:	Not required under normal conditions of use. Wear splashproof safety goggles if material could be misted or splashed into eyes.
Skin and body protection	:	Wear as appropriate: Impervious clothing Safety shoes Choose body protection according to the amount and concentration of the dangerous substance at the work place. Discard gloves that show tears, pinholes, or signs of wear. Wear resistant gloves (consult your safety equipment supplier).
Hygiene measures	:	Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Colour	: amber
Odour	: No data available
Odour Threshold	: No data available
pH	: No data available
Melting point/freezing point	: No data available
Boiling point/boiling range	: > 424.9 °F / 218.3 °C (1013.333 hPa)
Flash point	: > 222 °C Method: Cleveland open cup
Evaporation rate	: > 1 Ethyl Ether
Flammability (solid, gas)	: No data available
Upper explosion limit	: No data available
Lower explosion limit	: No data available

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Vapour pressure : < 0.1000000 mmHg

Relative vapour density : > 1AIR=1

Relative density : 0.89 (60.00 °F)

Density : 0.8916 g/cm3 (15.56 °C)

Solubility(ies)
Water solubility : No data available

Solubility in other solvents : No data available

Partition coefficient: noctanol/water : No data available

Thermal decomposition : No data available

Viscosity
Viscosity, dynamic : No data available

Viscosity, kinematic : 146 mm2/s (40 °C)

Oxidizing properties : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous reactions	: Product will not undergo hazardous polymerization.
Incompatible materials	: Strong oxidizing agents
Hazardous decomposition products	Aldehydes carbon dioxide and carbon monoxide Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	: Inhalation Skin contact Eye Contact Ingestion

Acute toxicity
Not classified based on available information.
Components:
RESIDUAL OILS (PETROLEUM), SOLVENT-DEWAXED:

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg
Acute inhalation toxicity	: LC50 (Rat): > 5.58 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: Not classified as acutely toxic by inhalation under GHS. Remarks: No mortality observed at this dose.
Acute dermal toxicity	: LD50 (Rabbit): > 5,000 mg/kg Remarks: No mortality observed at this dose.

LD50 (Rabbit): > 2,000 mg/kg
Assessment: Not classified as acutely toxic by dermal absorption under GHS.

DISTILLATES (PETROLEUM), HYDROTREATED LIGHT:
Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg
Assessment: No adverse effect has been observed in acute dermal toxicity tests.

AMINES, C12-14-TERT-ALKYL:
Acute oral toxicity : LD50 (Rat): 612 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat, female): 1.19 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rat): 251 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation
Not classified based on available information.
Product:
Remarks: May cause skin irritation in susceptible persons.

Components:
RESIDUAL OILS (PETROLEUM), SOLVENT-DEWAXED:
Species: Rabbit
Result: No skin irritation

DISTILLATES (PETROLEUM), HYDROTREATED LIGHT:

Result: Slight, transient irritation

AMINES, C12-14-TERT-ALKYL:
Species: Rabbit
Result: Corrosive after 3 minutes to 1 hour of exposure

Serious eye damage/eye irritation Not classified based on available information.

Product:
Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin.

Remarks: Unlikely to cause eye irritation or injury.

Components:
RESIDUAL OILS (PETROLEUM), SOLVENT-DEWAXED:
Species: Rabbit
Result: No eye irritation

DISTILLATES (PETROLEUM), HYDROTREATED LIGHT:
Result: Slight, transient irritation

AMINES, C12-14-TERT-ALKYL:
Species: Rabbit
Result: Corrosive

Respiratory or skin sensitisation
Skin sensitisation: May cause an allergic skin reaction.
Respiratory sensitisation: Not classified based on available information.

Components:
RESIDUAL OILS (PETROLEUM), SOLVENT-DEWAXED:
Test Type: Buehler Test
Species: Guinea pig
Assessment: Does not cause skin sensitisation.

AMINES, C12-14-TERT-ALKYL:
Test Type: Buehler Test
Species: Guinea pig
Assessment: The product is a skin sensitiser, sub-category 1A.

Germ cell mutagenicity
Not classified based on available information.

Components:
AMINES, C12-14-TERT-ALKYL:

Genotoxicity in vitro : Test Type: Ames test
Test species: Salmonella typhimurium
Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Test species: Mouse

Cell type: Bone marrow
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity
Not classified based on available information.
Reproductive toxicity
Not classified based on available information.
STOT - single exposure
Not classified based on available information.
STOT - repeated exposure
Not classified based on available information.
Aspiration toxicity
Not classified based on available information.
Product:
No aspiration toxicity classification

Components:
RESIDUAL OILS (PETROLEUM), SOLVENT-DEWAXED:
No aspiration toxicity classification

DISTILLATES (PETROLEUM), HYDROTREATED LIGHT:
May be fatal if swallowed and enters airways.

Further information
Product:
Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
Product:
Ecotoxicology Assessment
Acute aquatic toxicity : Acute aquatic toxicity Category 3; Harmful to aquatic life.

Chronic aquatic toxicity : Chronic aquatic toxicity Category 3; Harmful to aquatic life with long lasting effects.

Components:

RESIDUAL OILS (PETROLEUM), SOLVENT-DEWAXED:

Toxicity to fish : LL50 (Pimephales promelas (fathead minnow)): > 100 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: WAF
Method: OECD Test Guideline 203
Remarks: No toxicity at the limit of solubility

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): > 10,000 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: WAF

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Method: OECD Test Guideline 202

Toxicity to algae : NOEL (Pseudokirchneriella subcapitata (green algae)): >= 100 mg/l
End point: Growth inhibition
Exposure time: 72 h
Test Type: static test
Test substance: WAF
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOELR (Oncorhynchus mykiss (rainbow trout)): Calculated >= 1,000 mg/l
Exposure time: 14 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEL (Daphnia (water flea)): 10 mg/l
Exposure time: 21 d
Test substance: WAF
Method: OECD Test Guideline 211

DISTILLATES (PETROLEUM), HYDROTREATED LIGHT:

Toxicity to fish

Toxicity to algae

Toxicity to daphnia and other aquatic invertebrates

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Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	Remarks: Information given is based on data obtained from similar substances.
: LC50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l Exposure time: 96 h Test Type: semi-static test Test substance:	: EL50 (Pseudokirchneriella subcapitata (green algae)): > 1 - 3 mg/l Exposure time: 72 h Test Type: static test Test substance: WAF Method: OECD Test Guideline 201 Remarks: Information given is based on data obtained from similar substances. : NOEL (Water flea (Daphnia magna)): 0.48 mg/l

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AMINES, C12-14-TERT-ALKYL:

WAF Method: OECD Test Guideline 203 Remarks: Information given is based on data obtained from similar substances.	Exposure time: 21 d Test Type: semi-static test Test substance: WAF Method: OECD Test Guideline 211 Remarks: Information given is based on data obtained from similar substances.

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Toxicity to fish

: EL50 (Water flea (Daphnia magna)): 1.4 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: WAF
Method: OECD Test Guideline 202

Toxicity to daphnia and other aquatic invertebrates

Toxicity to algae

: EC50 (Water flea (Daphnia magna)): 2.5 mg/l
Exposure time: 48 h
Test Type: static test

: ErC50 (Pseudokirchneriella subcapitata (microalgae)): 0.44 mg/l
End point: Growth inhibition
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity)

Toxicity to fish (Chronic toxicity)

NOEC (Pseudokirchneriella subcapitata (microalgae)): 0.05 mg/l
End point: Growth inhibition
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

M-Factor (Chronic aquatic toxicity)

: LC50 (Oncorhynchus mykiss (rainbow trout)): 1.3 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

: 1

: NOEC (Oncorhynchus mykiss (rainbow trout)): 0.078 mg/l
Exposure time: 96 d
Test Type: flow-through test
Method: OECD Test Guideline 210

:
1

Persistence and degradability
Components:
RESIDUAL OILS (PETROLEUM), SOLVENT-DEWAXED:
Biodegradability : Result: Not readily biodegradable.
Biodegradation: 2 - 4 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

DISTILLATES (PETROLEUM), HYDROTREATED LIGHT:
Biodegradability : Result: Inherently biodegradable
Biodegradation: 58.6 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Remarks: Expected to be biodegradable

AMINES, C12-14-TERT-ALKYL:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 22 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

No data available

Bioaccumulative potential

Components:

AMINES, C12-14-TERT-ALKYL**:**

Partition coefficient: noctanol/water : log Pow: 2.9

No data available

Mobility in soil

Components:

No data available

Other adverse effects

No data available

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Harmful to aquatic life with long lasting effects.

Components:

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

REGULATION

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ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.

U.S. DOT - ROAD

Not dangerous goods

CFR_RAIL_C

Not dangerous goods

U.S. DOT - INLAND WATERWAYS

Not dangerous goods

TDG_ROAD_C

Not dangerous goods

TDG_RAIL_C

Not dangerous goods

TDG_INWT_C

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

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Not dangerous goods

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant		no

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Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION

SARA 311/312 Hazards : Acute Health Hazard

SARA 313 This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65 This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL

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Valvoline™ High Performance SAE 80W-90 Gear Oil Version:

AICS	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory

Inventories
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information
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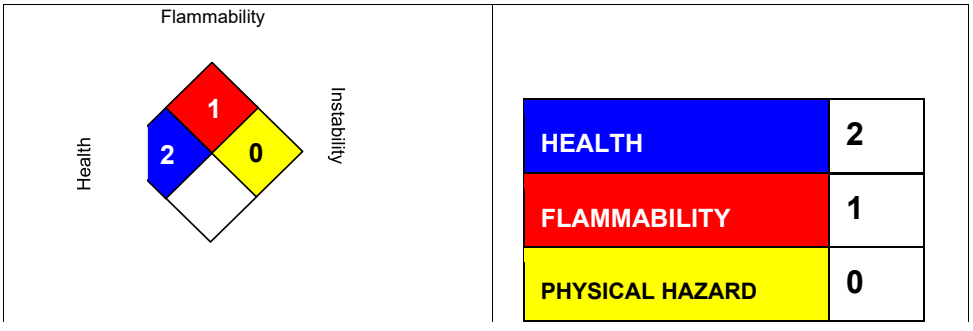
NFPA:	**HMIS III:**



Special hazard.	0 = not significant, 1 =Slight, 2 = Moderate, 3 = High 4 = Extreme, * = Chronic

NFPA Flammable and Combustible Liquids Classification
Combustible Liquid Class IIIB

Full text of H-Statements

H227	Combustible liquid.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.

Sources of key data used to compile the Safety Data Sheet
Valvoline internal data including own and sponsored test reports
The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Valvoline's Environmental Health and Safety Department (1-800-VALVOLINE).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet :
ACGIH : American Conference of Industrial Hygienists
BEI : Biological Exposure Index
CAS : Chemical Abstracts Service (Division of the American Chemical Society).
CMR : Carcinogenic, Mutagenic or Toxic for Reproduction
FG : Food grade

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GHS : Globally Harmonized System of Classification and Labeling of Chemicals.
H-statement : Hazard Statement
IATA : International Air Transport Association.
IATA-DGR : Dangerous Goods Regulation by the “International Air Transport Association” (IATA).

ICAO : International Civil Aviation Organization
ICAO-TI (ICAO) : Technical Instructions by the “International Civil Aviation Organization”
IMDG : International Maritime Code for Dangerous Goods
ISO : International Organization for Standardization
logPow : octanol-water partition coefficient
LCxx : Lethal Concentration, for xx percent of test population
LDxx : Lethal Dose, for xx percent of test population.
ICxx : Inhibitory Concentration for xx of a substance
Ecxx : Effective Concentration of xx
N.O.S.: Not Otherwise Specified
OECD : Organization for Economic Co-operation and
Development OEL : Occupational Exposure Limit P-Statement
: Precautionary Statement
PBT : Persistent , Bioaccumulative and Toxic
PPE : Personal Protective Equipment
STEL : Short-term exposure limit
STOT : Specific Target Organ Toxicity
TLV : Threshold Limit Value TWA
: Time-weighted average
vPvB : Very Persistent and Very Bioaccumulative WEL
: Workplace Exposure Level

CERCLA : Comprehensive Environmental Response, Compensation, and Liability Act
DOT : Department of Transportation
FIFRA : Federal Insecticide, Fungicide, and Rodenticide Act
HMIRC : Hazardous Materials Information Review Commission
HMIS : Hazardous Materials Identification System
NFPA : National Fire Protection Association
NIOSH : National Institute for Occupational Safety and Health
OSHA : Occupational Safety and Health Administration
PMRA : Health Canada Pest Management Regulatory Agency
RTK : Right to Know
WHMIS : Workplace Hazardous Materials Information System

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29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Synpower™ 75W-90
SYNTHETIC GEAR OIL

Recommended use of the chemical and restrictions on use

Details of the supplier of the safety data sheet Valvoline LLC 3499 Blazer Parkway Lexington, KY 40509 United States of America SDS@valvoline.com	**Emergency telephone number** 1-800-VALVOLINE **Regulatory Information Number** 1-800-TEAMVAL **Product Information** 1-800-TEAMVAL

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SECTION 2. HAZARDS IDENTIFICATION :

:

GHS Classification

Eye irritation : Category 2A

Skin sensitization : Category 1

GHS Label element

Hazard pictograms :

:

Signal Word : Warning

Hazard Statements : May cause an allergic skin reaction.
Causes serious eye irritation.

Precautionary Statements : **Prevention:**
Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Wash skin thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.
Wear eye protection/ face protection.
Wear protective gloves.
Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Wash contaminated clothing before reuse.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Defatter

Hazardous components

Chemical Name	CAS-No.	Classification	Concentration (%)
HEAVY PARAFFINIC DISTILLATE	64742-54-7	Asp. Tox. 1; H304	61.42
DI-TERT-BUTYL POLYSULFIDE	68937-96-2	Flam. Liq. 4; H227 Skin Sens. 1B; H317	4.99
WHITE MINERAL OIL	8042-47-5	Not a hazardous substance or mixture.	2.90
Phosphoric acid esters, amine salt	91745-46-9	Acute Tox. 4; H302 Eye Dam. 1; H318 Skin Sens. 1; H317 Aquatic Acute 2; H401 Aquatic Chronic 2; H411	1.99

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SECTION 4. FIRST AID MEASURES

General advice	Notes to physician
If inhaled	: Move out of dangerous area. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended.
In case of skin contact	: If breathed in, move person into fresh air. If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of eye contact	: Remove contaminated clothing. If irritation develops, get medical attention. If on skin, rinse well with water. First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water. Wash contaminated clothing before re-use.
If swallowed	: Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye.
Most important symptoms and effects, both acute and delayed	: Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
	: Acute aspiration of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Repeated aspiration of small quantities of mineral oil can produce chronic inflammation of the lungs (i.e. lipoid pneumonia) that may progress to pulmonary fibrosis. Symptoms are often subtle and radiological changes appear worse than clinical abnormalities. Occasionally, persistent cough, irritation of the upper respiratory tract, shortness of breath with exertion, fever, and bloody sputum occur. Inhalation exposure

to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:
acne stomach or intestinal upset (nausea, vomiting, diarrhea)
irritation (nose, throat, airways) May cause an allergic skin reaction.
Causes serious eye irritation.

: No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water spray
Foam
Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : carbon dioxide and carbon monoxide
Hydrocarbons
Aldehydes
Sulphur oxides
Hydrogen chloride gas
Nitrogen oxides (NOx)
Oxides of phosphorus

Specific extinguishing methods : Product is compatible with standard fire-fighting agents.

Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

Other information : Comply with all applicable federal, state, and local regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Do not breathe vapours/dust.

Do not smoke.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Container hazardous when empty.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
WHITE MINERAL OIL	8042-47-5	REL	5 mg/m3 Mist.	NIOSH/GUIDE
		STEL	10 mg/m3 Mist.	NIOSH/GUIDE
		PEL	5 mg/m3 Mist.	OSHA_TRANS
		TWA	5 mg/m3 Mist.	TN OEL
		TWA	5 mg/m3 Inhalable fraction.	ACGIH

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

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Personal protective equipment

Hand protection

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and body protection : Wear as appropriate:
impervious clothing
Safety shoes
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Discard gloves that show tears, pinholes, or signs of wear.
Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures : Wash hands before breaks and at the end of workday.
When using do not eat or drink.
When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : liquid

Odour : mild

Odour Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Boiling point/boiling range : No data available

Flash point : > 390 °F / > 199 °C
Method: Cleveland open cup

Evaporation rate : No data available

Flammability (solid, gas)	: No data available
Upper explosion limit	: 6 %(V) Calculated Explosive Limit
Lower explosion limit	: 1 %(V) Calculated Explosive Limit
Vapour pressure	: 1.3333333 hPa (20 °C) Calculated Vapor Pressure

Relative vapour density	: No data available
Relative density	: No data available
Density	: 0.86 g/cm3 (15.56 °C)
Solubility(ies) Water solubility	: No data available
Solubility in other solvents	: No data available
Partition coefficient: noctanol/water	: No data available
Thermal decomposition	: No data available
Viscosity Viscosity, dynamic	: No data available
Viscosity, kinematic	: 100 mm2/s (40 °C)
Oxidizing properties	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous reactions : Product will not undergo hazardous polymerization.

Conditions to avoid : excessive heat
Exposure to sunlight.

Incompatible materials : Iron
steel
Strong acids
Strong oxidizing agents

Hazardous decomposition products
carbon dioxide and carbon monoxide
Hydrocarbons
Hydrogen chloride gas
Nitrogen oxides (NOx)
Oxides of phosphorus
Sulphur oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation
Skin contact
Eye Contact
Ingestion

Acute toxicity
Not classified based on available information.

Components:
HEAVY PARAFFINIC DISTILLATE:
Acute oral toxicity : LD 50 (Rat): > 15 g/kg

Acute dermal toxicity : LD 50 (Rabbit): > 5 g/kg

DI-TERT-BUTYL POLYSULFIDE:
Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402

WHITE MINERAL OIL:
Acute oral toxicity : LD 50 (Rat): 50,000 mg/kg

Acute dermal toxicity : LD 50 (Rabbit): > 2,000 mg/kg
Assessment: Not classified as acutely toxic by dermal absorption under GHS.

Phosphoric acid esters, amine salt:
Acute oral toxicity : LD 50 (Rat): 2,000 mg/kg

Skin corrosion/irritation
Not classified based on available information.
Product:
Remarks: May cause skin irritation in susceptible persons.

Components:
HEAVY PARAFFINIC DISTILLATE:
Result: Mildly irritating to skin

DI-TERT-BUTYL POLYSULFIDE:
Result: Slightly to moderately irritating to skin

WHITE MINERAL OIL:
Result: Not irritating to skin

Phosphoric acid esters, amine salt:
Result: Mildly irritating to skin

Serious eye damage/eye irritation
Causes serious eye irritation.

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Product:
Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes serious eye irritation.

Components:
HEAVY PARAFFINIC DISTILLATE:
Result: Not irritating to eyes

DI-TERT-BUTYL POLYSULFIDE:
Result: Slightly irritating to eyes

WHITE MINERAL OIL:
Result: Not irritating to eyes

Phosphoric acid esters, amine salt:
Result: Severely irritating to eyes

Respiratory or skin sensitisation
Skin sensitisation: May cause an allergic skin reaction.
Respiratory sensitisation: Not classified based on available information.
Components:
DI-TERT-BUTYL POLYSULFIDE:
Test Type: Maximisation Test (GPMT)
Species: Guinea pig
Assessment: The product is a skin sensitiser, sub-category 1B.
Method: OECD Test Guideline 406

Phosphoric acid esters, amine salt:
Assessment: May cause sensitisation by skin contact.

Germ cell mutagenicity
Not classified based on available information.
Components:
DI-TERT-BUTYL POLYSULFIDE:
Genotoxicity in vitro : Test Type: in vitro assay
Result: Positive results were obtained in some in vitro tests.

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Genotoxicity in vivo : Test Type: Micronucleus test Test species: Mouse
Cell type: Bone marrow
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity
Not classified based on available information.
Reproductive toxicity
Not classified based on available information.
STOT - single exposure
Not classified based on available information.
STOT - repeated exposure
Not classified based on available information.
Aspiration toxicity
Not classified based on available information.

Components:
HEAVY PARAFFINIC DISTILLATE:
May be fatal if swallowed and enters airways.

Further information
Product:
Remarks: No data available

Carcinogenicity:

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

HEAVY PARAFFINIC DISTILLATE:

Toxicity to fish	: LL50 (Fish): > 100 mg/l
Toxicity to daphnia and other aquatic invertebrates	: EL50 (Aquatic invertebrates): > 10,000 mg/l
Toxicity to algae	: EL50 (Algae, algal mat (Algae)): > 100 mg/l
Toxicity to fish (Chronic toxicity)	: NOEC (Fish): 10 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Aquatic invertebrates): 10 mg/l

DI-TERT-BUTYL POLYSULFIDE:

Toxicity to daphnia and other aquatic invertebrates	: EC50 (Water flea (Daphnia magna)): 0.24 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202
Toxicity to algae	: EC50 (Pseudokirchneriella subcapitata (microalgae)): 2.45 mg/l End point: Growth inhibition

Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (microalgae)): 0.1 mg/l
End point: Growth inhibition
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

Phosphoric acid esters, amine salt:
Ecotoxicology Assessment
Acute aquatic toxicity : Toxic to aquatic life.

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Components:

DI-TERT-BUTYL POLYSULFIDE:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 13 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Bioaccumulative potential

Components:

DI-TERT-BUTYL POLYSULFIDE:

Partition coefficient: noctanol/water : log Pow: 5.6 (20 °C) pH: 7

Mobility in soil

Components:

No data available

Other adverse effects

No data available

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Toxic to aquatic life with long lasting effects.

Components:

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : The product should not be allowed to enter drains, water

courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Dispose of in accordance with all applicable local, state and federal regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.

U.S. DOT - ROAD

Not dangerous goods

CFR_RAIL_C

Not dangerous goods

U.S. DOT - INLAND WATERWAYS

Not dangerous goods

TDG_ROAD_C

Not dangerous goods

TDG_RAIL_C

Not dangerous goods

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TDG_INWT_C

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

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Not dangerous goods	MARINE POLLUTANT:(DI-TERT-BUTYL POLYSULFIDE)

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

MX_DG

Not dangerous goods

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant		yes

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION

SARA 311/312 Hazards : Acute Health Hazard

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313. **Component(s)SARA 313**

Pennsylvania Right To Know

HEAVY PARAFFINIC DISTILLATE	64742-54-7	50.00 - 70.00 %
VISCOSITY MODIFIER	Not Assigned	20.00 - 30.00 %
DI-TERT-BUTYL POLYSULFIDE	68937-96-2	1.00 - 5.00 %
WHITE MINERAL OIL	8042-47-5	1.00 - 5.00 %

New Jersey Right To Know

HEAVY PARAFFINIC DISTILLATE	64742-54-7	50.00 - 70.00 %

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VISCOSITY MODIFIER	Not Assigned	20.00 - 30.00 %
DI-TERT-BUTYL POLYSULFIDE	68937-96-2	1.00 - 5.00 %
WHITE MINERAL OIL	8042-47-5	1.00 - 5.00 %
LUBRICANT ADDITIVE	Not Assigned	1.00 - 5.00 %

California Prop 65 Proposition 65 warnings are not required for this product based on the results of a risk assessment.

The components of this product are reported in the following inventories:

TSCA	: On TSCA Inventory
DSL	: All components of this product are on the Canadian DSL.
AUSTR	: On the inventory, or in compliance with the inventory
NZIOC	: Not in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECL	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

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SECTION 16. OTHER INFORMATION

Further information
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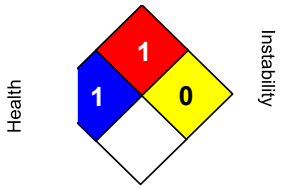
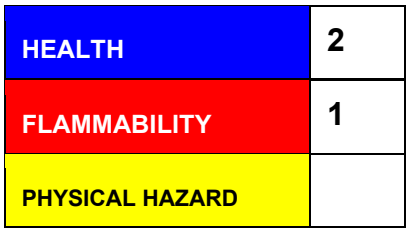
NFPA:	HMIS III:
Flammability  Special hazard.	 0 = not significant, 1 =Slight, 2 = Moderate, 3 = High 4 = Extreme, * = Chronic

NFPA Flammable and Combustible Liquids Classification
Combustible Liquid Class IIIB

Full text of H-Statements referred to under sections 2 and 3.

H227	Combustible liquid.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.

H401	Toxic to aquatic life.
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BEI : Biological Exposure Index

CAS : Chemical Abstracts Service (Division of the American Chemical Society).
CMR : Carcinogenic, Mutagenic or Toxic for Reproduction
FG : Food grade
GHS : Globally Harmonized System of Classification and Labeling of Chemicals.
H-statement : Hazard Statement
IATA : International Air Transport Association.
IATA-DGR : Dangerous Goods Regulation by the “International Air Transport Association” (IATA).

ICAO : International Civil Aviation Organization
ICAO-TI (ICAO) : Technical Instructions by the “International Civil Aviation Organization”
IMDG : International Maritime Code for Dangerous Goods
ISO : International Organization for Standardization
logPow : octanol-water partition coefficient
LCxx : Lethal Concentration, for xx percent of test population LDxx : Lethal Dose, for xx percent of test

population. ICxx : Inhibitory Concentration for xx of
a substance
Ecxx : Effective Concentration of xx
N.O.S.: Not Otherwise Specified
OECD : Organization for Economic Co-operation and Development
OEL : Occupational Exposure Limit P-Statement
: Precautionary Statement
PBT : Persistent , Bioaccumulative and Toxic
PPE : Personal Protective Equipment
STEL : Short-term exposure limit
STOT : Specific Target Organ
Toxicity TLV : Threshold Limit Value
TWA : Time-weighted
average
vPvB : Very Persistent and Very Bioaccumulative
WEL : Workplace Exposure Level

CERCLA : Comprehensive Environmental Response, Compensation, and Liability Act
DOT : Department of Transportation
FIFRA : Federal Insecticide, Fungicide, and Rodenticide Act
HMIRC : Hazardous Materials Information Review Commission
HMIS : Hazardous Materials Identification System
NFPA : National Fire Protection Association
NIOSH : National Institute for Occupational Safety and Health
OSHA : Occupational Safety and Health Administration
PMRA : Health Canada Pest Management Regulatory Agency
RTK : Right to Know
WHMIS : Workplace Hazardous Materials Information System

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SAFETY DATA SHEET		Revision Date: 07/31/2016
		Print Date: 11/1/2016
		SDS Number: R0300933

Synpower™ 75W-90 SYNTHETIC GEAR OIL Version:

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[MOLYWHITE RE No.00][KYODO YUSHI CO., LTD.][07-543]

SAFETY DATA SHEET

Components:

Component	Contents(%)
Base oil(Synthetic hydrocarbon oil, refined mineral oil)	85-95
Thickener(Lithium soap)	< 10
EP additive(Containing molybdenum compounds,	< 5
Oxidation inhibitor(Butylated hydroxytoluene (BHT))	< 5
Additive(s)(Containing barium compounds)	< 5

Hazardous Ingredients:

Component	CAS No.	Contents(%)
Molybdenum compounds	Confidential	1-3

See Section 8 for exposure limits (if applicable).
See Section 15 for legal controlled substance (if applicable).

4. First-aid measures

Eye Contact:
- Immediately flush with water for at least 15 minutes. Get medical attention.

Skin Contact:
- Thoroughly remove with cloth or paper and wash carefully with soap and water.

Inhalation:
- Remove the victim from the contamination to fresh air. Cover the victim in a blanket to keep warm and quiet. Consult a physician.

Ingestion:
- Do not induce vomiting. Immediate consult a physician.

Notes to Physicians:
- Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. Fire-fighting measures

Flammable Limits: No data available.
Autoignition Temperature: No data available.

Extinguishing Media:
- Foam, dry chemical, CO2, dry sand.

Unsuitable Extinguishing Media:
- Do not use water. Water can be dangerous possibly leading to fire spread.

Specific Hazards with Regard to Fire-fighting:
- Thermal decomposition and combustion may produce carbon monoxide and/or carbon dioxide.

Specific Methods of Fire-fighting:
- In the early stages of fire, use dry chemical, CO2, dry sand, etc. fire-extinguisher.
- In case of massive fire, use foam fire-extinguisher to shut off the air supply.
- Get all persons to safety. Authorized personnel only at the fire site.

Protection of Firefighters:
- Fire-fighters should wear protective equipment.
- Start fire fighting from the windward side.

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6. Accidental release measures

Personal Precautions:
- Wear protective equipment during cleanup work.

Environmental Precautions:
- Prevent spills from entering sewers or waterway.

Methods for Clean-Up:
- For small spills, absorb with inert material (e.g., dry sand, sawdust or waste cloth), then place in a chemical waste container with a cover for disposal.
- For large spills, dike to keep spillage in a safe place for later disposal.

Prevention of Secondary Hazards:
- Immediately shut off all sources of ignition.

7. Handling and storage

Handling

Technical Measures:
- Handle the product in a well-ventilated place. Do not leak, flood or scatter the product to prevent unwanted evaporation.

Precautions:
- Contact with eye may cause irritation. Use protective glasses to avoid contact with eyes.
- Contact with skin may cause irritation. Use protective gloves to avoid skin contact.
- Do not swallow. (Drinking the product may cause diarrhea and vomiting.)
- Close container after each use.

Precautions for Safe Handling:
- Wear gloves to avoid injury on hands at opening the container.

Storage

Appropriate Storage Conditions:
- Keep container closed to protect from dust/water ingress after use.
- Store in a cool, dry place, away from direct sunlight, heat source and fire.
- Keep out of reach of children.

Safe Packaging Materials:
- Do not expose empty container to pressure.
- Do not weld, heat, drill or cut container. Residue ignition and explosion hazards.

8. Exposure controls/personal protection

Exposure Guidelines

ACGIH
- Butylated hydroxytoluene (BHT): TWA 2mg/m3
- Mineral oil: TWA 5mg/m3

Engineering Controls:
- When vapor or mist exhales, install an apparatus to close the vapor/mist source or ventilation equipment.

Protective Equipment

Respiratory Protection:
- Wear a gas mask for organic gas when needed (not necessary under normal conditions).

Hand Protection:
- Wear oil-resistant protective gloves in case of prolonged and/or repeated skin contact.

Eye Protection:
- Wear chemical safety goggles whenever the product splashes.

Skin and Body Protection:
- Wear long-sleeved oil-resistant working clothes whenever handling for many hours and/or getting wet. Immediately take off the wet clothes and thoroughly wash them before reusing.

9. Physical and chemical properties

Appearance	
Form	: Semi-fluid
Color	: Yellow
Odor	: Slight odor
pH	: No data available.
Melting point	: No data available.
Flash point	: 190°C(Seta)
Vapor pressure	: No data available.
Solubility in water	: Insoluble in water
Vapor density	: No data available.
Density	: 0.87(25°C)g/cm3
Partition coefficient: n-octanol/water	: No data available.
Viscosity	: No data available.
Dropping point	: 193°C

10. Stability and reactivity

Reactivity, Conditions to avoid:
- Avoid contact with strong oxidant.

Chemical Stability:
- Product is stable under normal conditions.

Possibility of Hazardous Reactions:
- Not available.

Materials to avoid:
- Strong oxidizers.

Hazardous Decomposition Products:
- This material is expected to be stable under normal conditions of use.

11. Toxicological information

Information on the likely routes of exposure: Not applicable.
Delayed and immediate effects and also chronic effects from short- and long-term exposure

Acute toxicity - Oral:
- Not classified based on the category of each ingredient or the product properties.
- Refined mineral oil LD50 Acute oral >5 g/kg (rat)

Acute toxicity - Dermal:
- Not classified based on the category of each ingredient or the product properties.

Acute toxicity - Inhalation (Gases): No data available.
Acute toxicity - Inhalation (Vapors): No data available.
Acute toxicity - Inhalation (Dusts and mists): No data available.
Skin corrosion/irritation: No data available.

Eye damage/irritation: No data available.
Sensitization - Respiratory: No data available.
Sensitization - Skin: No data available.
Germ cell mutagenicity: No data available.
Carcinogenicity: No data available.
Toxic to reproduction: No data available.
Effects on or via lactation: No data available.
Specific target organ toxicity (Single exposure):
No data available.
Specific target organ toxicity (Repeated exposure):
No data available.
Aspiration hazard: No data available.
Other Toxicity Information
NTP Report on Carcinogens: Not listed.
IARC Monographs: Not listed.

12. Ecological information

Ecotoxicity
Hazardous to the aquatic environment (Acute hazard):
No data available.
Hazardous to the aquatic environment (Long-term hazard):
・Classified under Category Chronic 3 based on the category of each ingredient or the product properties.
Persistence and Degradability: No data available.
Bioaccumulative potential: No data available.
Mobility in soil: No data available.
Hazardous to the ozone layer: No data available.

13. Disposal considerations

Waste Residues:
・Properly dispose of in accordance with any relevant regulations.
・Properly dispose of by a licensed waste disposer.
・For in-house incineration disposal, ensure exhaust gas treatment (washing treatment, etc.) to prevent air pollution from sulfur oxides.
・No dumping.
・When burning, be sure to do so on someone’s watch in a safe place and in the way that burning and/or explosion will never pose a potential hazard.
Contaminated Packaging:
・Dispose of container after completely removing the contents.

14. Transport information

DOT Hazardous Materials: Not applicable.
UN Transport of Dangerous Goods
UN Number: Not applicable.
UN Proper Shipping Name: Not applicable.
Transport Hazard Class: Not applicable.
Packing Group: Not applicable.
Land(RID/ADR): Not applicable.
Sea(IMO/IMDG): Not applicable.
Air(ICAO/IATA): Not applicable.
Specific Precautionary Transport Measures and Conditions:
・Contains combustible liquid. Keep fire away.
・Handle with care to prevent container damage.

・Ensure proper packaging before shipping to avoid load shifting and falling accident.

15. Regulatory information

Regulatory information with regard to this product in your country or your region should be examined by your own responsibility.

US TSCA (Toxic Substances Control Act)
All components of this product are listed on the TSCA inventory of Chemical Substances.

US OSHA (Occupational Safety and Health Act):
This product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200, since this product contains OSHA Hazardous Substances;

Name	CAS No.	Contents(%)
Molybdenum compounds	Confidential	1-3

US CERCLA
(Comprehensive Environmental Release, Compensation & Liability Act):
CERCLA Hazardous Substances:

Name	CAS No.	Contents(%)
Zinc compounds	Confidential	0.1-0.5

US SARA (Superfund Amendment & Reauthorization Act) Title III:
SARA Extremely Hazardous Substances (302): None

SARA Hazard Categories (311/312): None

SARA Toxic Release Inventory (TRI) (313):

Name	CAS No.	Contents(%)
Barium compounds	Confidential	0.3-0.7
Zinc compounds	Confidential	0.1-0.5

16. Other Information

NFPA
Health hazards: 1
Flammability: 1
Instability: 0
Special Hazard: -

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Original date: Oct/31/2014
Revision date: / /

References

1. OSHA Hazard Communication Standard 29 CFR 1910.1200
2. Thresholds limit values for chemical substances and physical agents and biological exposure indices, ACGIH(2012)
3. IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS VOLUME 33
4. Report on Carcinogens Twelfth Edition 2011, NTP
5. EU CLP Regulation (EC No 1272/2008 ANNEX VI Harmonised classification and labelling for certain hazardous substances)
6. Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Third revised edition.

Disclaimer

This SDS is an addition and complementary document beside the technical data sheet.The information is based upon our knowledge about the product at the date of edition.

Since we cannot anticipate or control the different conditions under which these information or our product may be used, we make no guarantee that recommendations will be adequate for all individuals and situations.