

ROTTLER

S85A / S86A SURFACER MACHINE MAINTENANCE AND PARTS MANUAL



PARTS ORDERING

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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

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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

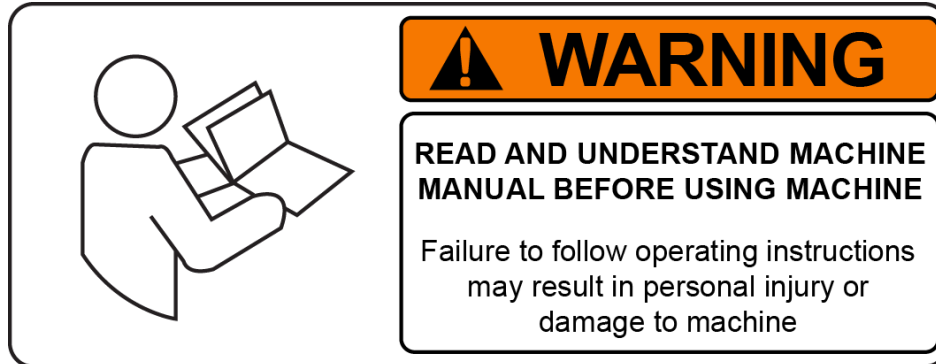
SDS

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 S85A / S86A 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 S85A / S86A 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 model S85A / S86A surfacing machine is a precision, high speed surfacing unit.

The model S85A / S86A can be equipped with tooling and accessories for surfacing most American passenger car and truck, inline, 90 and 60 degree V-type blocks as well as cylinder heads.

S85A / S86A machines may be readily tooled to resurface a wide variety of engines, including European and Asian models, as well as perform various other surfacing operations.

This machine is designed for two purposes:

1. The alignment of the deck surface to the pan rails and main bearing locations, as have been done in the original factory surfacing.
2. A considerable savings in surfacing time and operator involvement as a result of fast block clamping, and convenient controls.

Change over or resetting time required to set up V-type or in-line engines is a minimum, making this machine highly suited to the jobber shop where engines cannot be run through, in model lots.

All feeds and rapid travels are power operated and controlled from the conveniently located control panel.

Power required is 230 volt, single phase. This provides power to the variable speed AC motor controller, the horizontal S.C.R. drive, and various relays and solenoid valves that actuate mechanical controls on the machine to engage feeds and travels.

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 S85A / S86A 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 if 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.

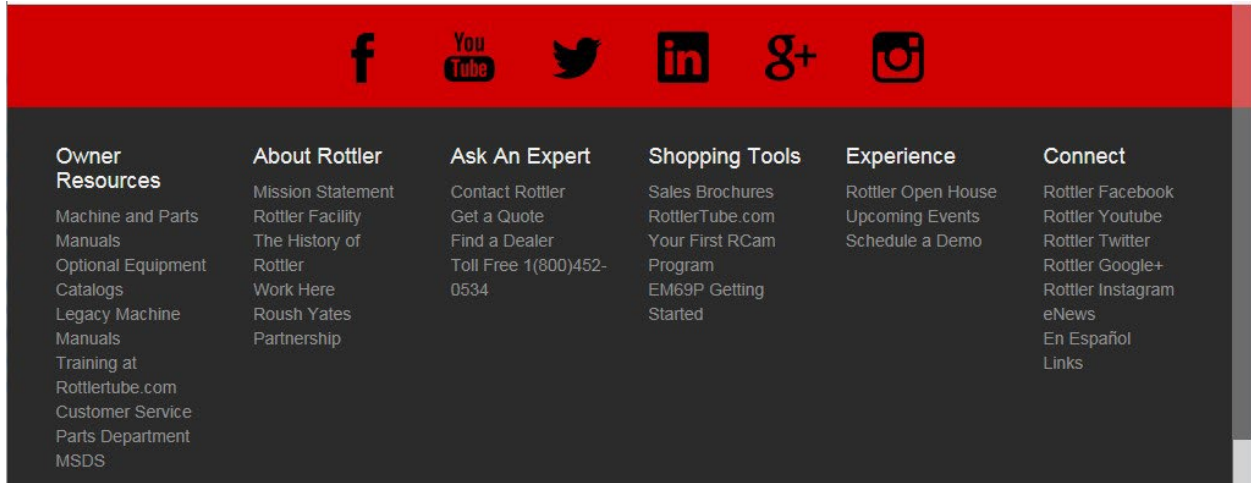
The issuance of a **RGR DOES NOT** guarantee credit - it is only authorization for the return of the goods. Credit for return merchandise is at the sole discretion of Rottler. Credit will be issued only after inspection of returned goods.

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.

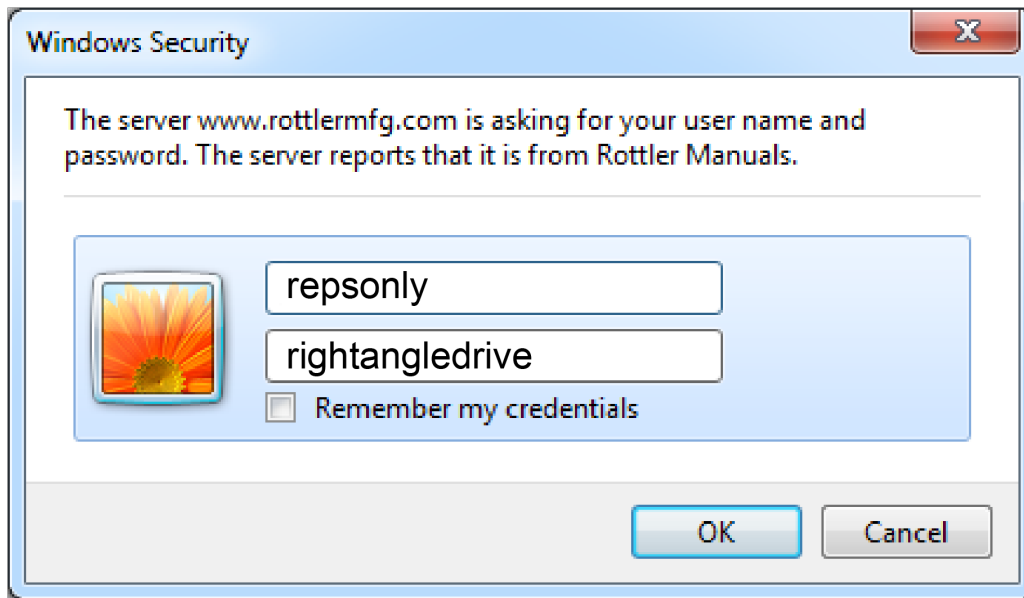
Online Documentation Access

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.



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Maintenance

Lubrication

Refer to the illustrations on the following pages for locations and the chart below for lubrication intervals. For ease of access to the grease fittings, an extension adapter is recommended. Rottler recommends the Lincoln Model 5855 Extension Adapter.

All linear bearings on Rottler Surfacing machines are equipped with the latest sealing and lubrication technologies available, ensuring long life and low maintenance requirements.

Horizontal Linear Bearing Grease Fittings

There are standard grease zerks on each of the linear bearings, facing away from the column. Use NLGI #2 White Lithium Grease applied with a grease gun. Remove the back cover of the enclosure to access the grease fittings.

Vertical Linear Bearing Grease Fittings

There are standard grease zerks on each of the linear bearings, facing away from the column. Use NLGI #2 White Lithium Grease applied with a grease gun. Remove the back cover of the enclosure to access the grease fittings.

Horizontal Ballscrew Nut

The horizontal ballscrew nut is located under the Spindle base inside the Main Base.

There is a standard grease zerk on the ball nut, typically facing downward. Grease the ball screw nut using NLGI #2 White Lithium Grease with a grease gun and wipe a small amount of grease on the screw just ahead of the nut.

Vertical Ballscrew Nut

The Vertical ballscrew nut is located inside the Spindle base inside the cover.

There is a standard grease zerk on the ball nut, typically facing downward. Grease the ball screw nut using NLGI #2 White Lithium Grease with a grease gun and wipe a small amount of grease on the screw just ahead of the nut.

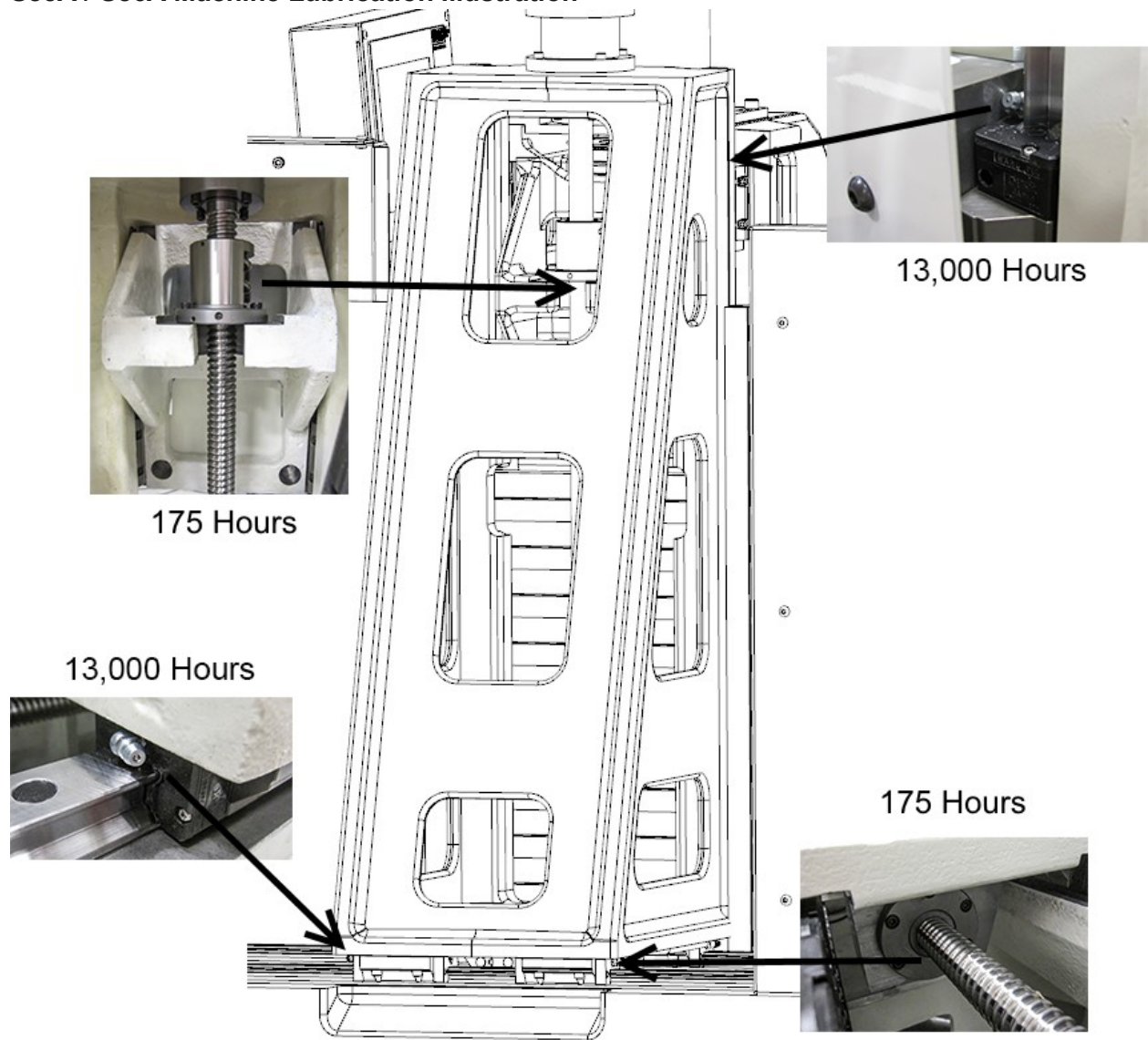
Spindle

The spindle on this machine is a sealed system that does not require any additional lubrication once installed.

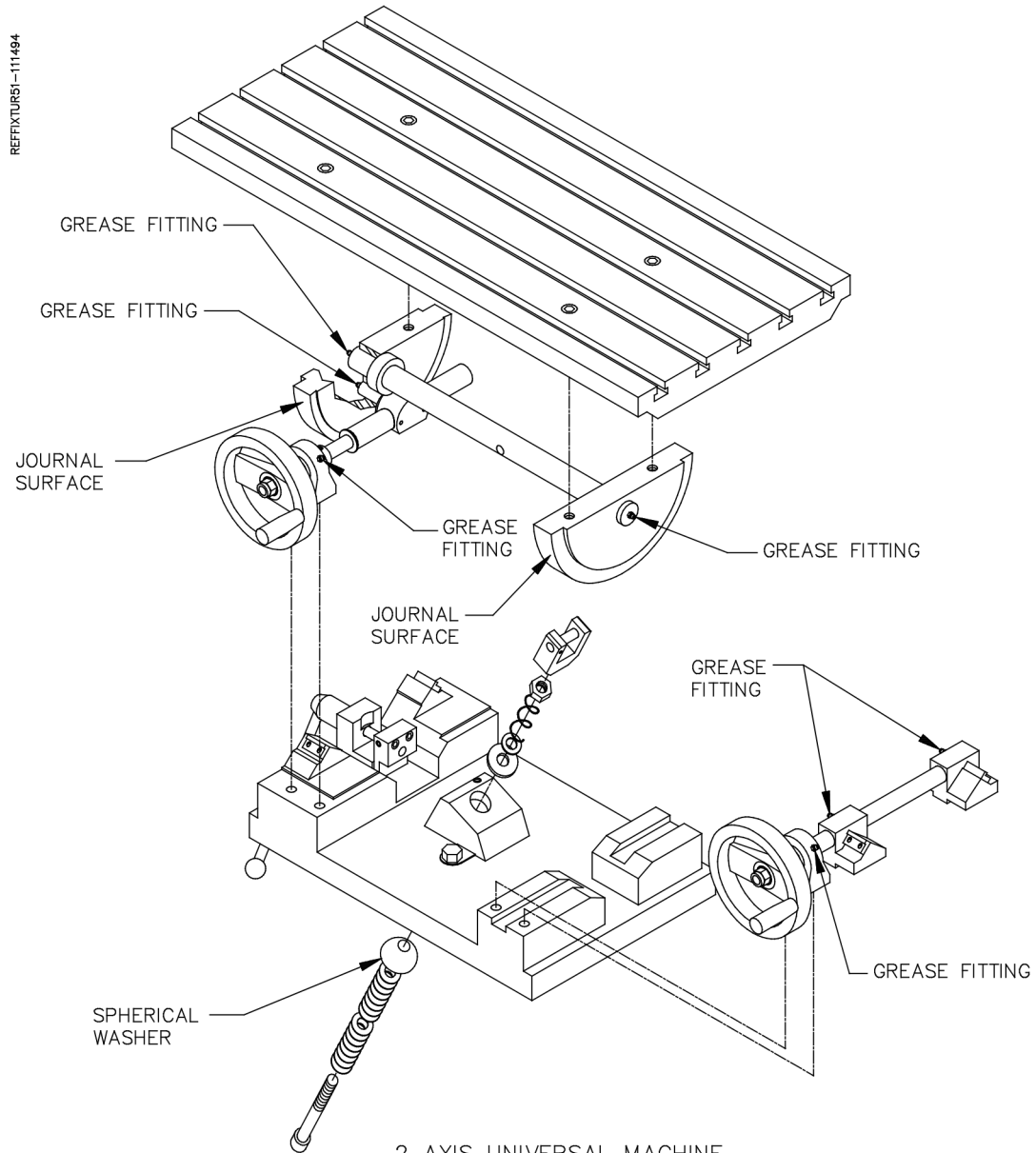
Lubrication – Quick Reference Chart

Assembly	Frequency	Lubrication Operation
Horizontal Ballscrew Nut	175 Hours	Grease with NLGI#2
Vertical Ballscrew Nut	175 Hours	Grease with NLGI#2
Horizontal Linear Bearings	15,000 Hours; 50,000 Components; or 10 Years	Grease with NLGI#2
Vertical Linear Bearings	15,000 Hours; 50,000 Components; or 10 Years	Grease with NLGI#2
Spindle Unit	None needed	None

S85A / S86A Machine Lubrication Illustration



2 Axis Universal Machine Table 7119Q – Lubrication Illustration



2 AXIS UNIVERSAL MACHINE
TABLE 7119Q LUBRICATION

Setting Cutting Tool Inserts

Travel the spindle base approximately to the center of the main base.



Turn off all power to machine before proceeding.

Remove cutterhead and chip shield. Replace cutterhead without chip shield. Attach a dial runout indicator to a cylinder head or engine block, etc.

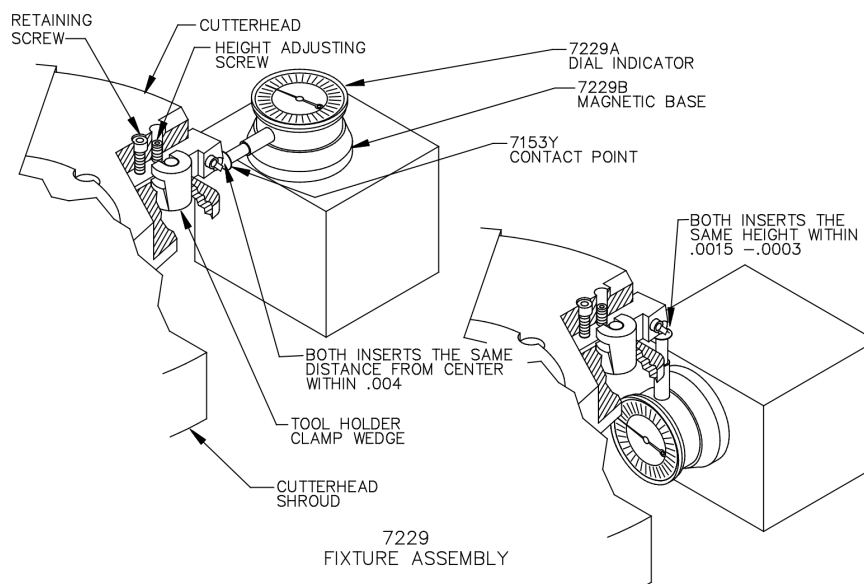
Rotate cutter head and check to see that both inserts are the same distance from the center of the spindle, within .001. If adjustment is necessary loosen the tool holder clamp wedge, and the retaining screws. Move tool in or out the required distance. Tighten the clamp wedge. Snug up the retaining screws. There is a set screw located at the bottom of the toolholder, it locks a dowel pin in place. When the in-out adjustment is set, loosen the set screw, the pin will pop out and hit the back of the slot. Tighten the set screw. This way, when a tool holder is removed and then replaced, it will be located very nearly where it was. Insert height will still need to be adjusted.

Rotate cutter head and check to see that both inserts are the same height within .001. If adjustment is necessary loosen the tool holder clamp wedge, then alternately loosen and tighten the height adjusting screw and the retaining screw, until both inserts are set as desired. Retighten the tool holder clamp wedge and recheck both inserts.

Production Cutting

Aluminum & Cast Iron

For fast tooling set-up, this machine can be set-up with one cast iron cutting insert and one aluminum cutting insert. Set the cast iron insert with no down or out adjustment. Set the aluminum style insert .02 further out and .005 lower than the first insert. With the cutter head set up this way, aluminum work can be easily cut. To cut cast iron simply remove the aluminum cutting insert from its holder.



Dial Indicator Setting

If chip shield, cutting insert, or dial indicator have been moved, the dial indicator should be reset.

With the surfacing cutter in the fore and aft position, press the left travel button until the cutterhead overlaps a test piece by about 1/2" when rotated.

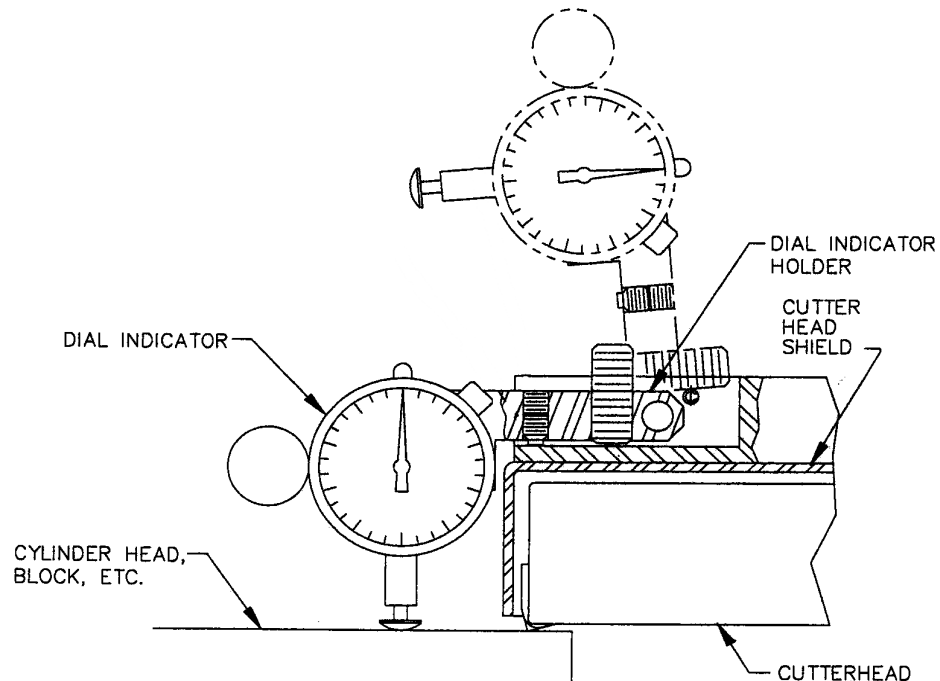
Touch off surface, by vertical slide and/or increment buttons until cutter insert just touches test piece surface when rotated back and forth.

CAUTION Do not lower the cutter head directly onto surface, it may chip the cutting tool insert.

Make a very light cut on your test piece about one inch in. Back out and without adjusting the height press the dial indicator down on this surface. Adjust it by: Loosing lock nut. Then turn adjusting screw up or down until the dial indicator is half way between its minimum and maximum range.

Tighten the lock nut firmly.

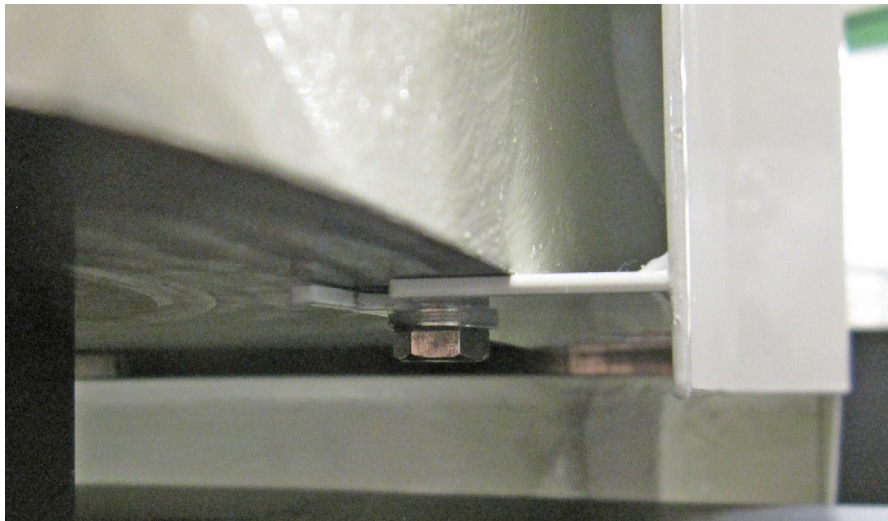
Set dial to zero.



Drive Sprocket / Motor Removal and Replacement

⚠ CAUTION *Turn off all power to the machine before continuing.*

1. Remove spindle/motor access cover by releasing cover latch.
2. Open and raise cover to remove.
3. Remove the 6 button head screws holding the spindle cover to vertical carriage.
4. Find the 2 screws holding cover at the bottom of carriage (see below) and loosen them. (Do not remove)
5. Remove the 2 screws holding the wire track.
6. Remove cover by spreading cover to clear housing.
7. Remove the 4 socket head screws holding motor mount bracket.
8. Loosen belt tension screws and remove belt.
9. Remove cover plate to access cable connections.
10. Make a note of wire numbers and which connectors they are attached to.
11. Remove wires.
12. Remove motor.



Driven Sprocket Removal and Replacement

⚠ CAUTION *Turn off all power to the machine before continuing.*

1. Make note of sprocket location.
2. To remove sprocket loosen the 2 set screws.
3. Tighten intermediate set screw to release sprocket.
4. Replace sprocket and fasten the 2 set screws.
5. Torque set screws to 23 ft. lb.

Cutterhead and Chip Guard Removal

 **CAUTION** Turn off all power to the machine before continuing.

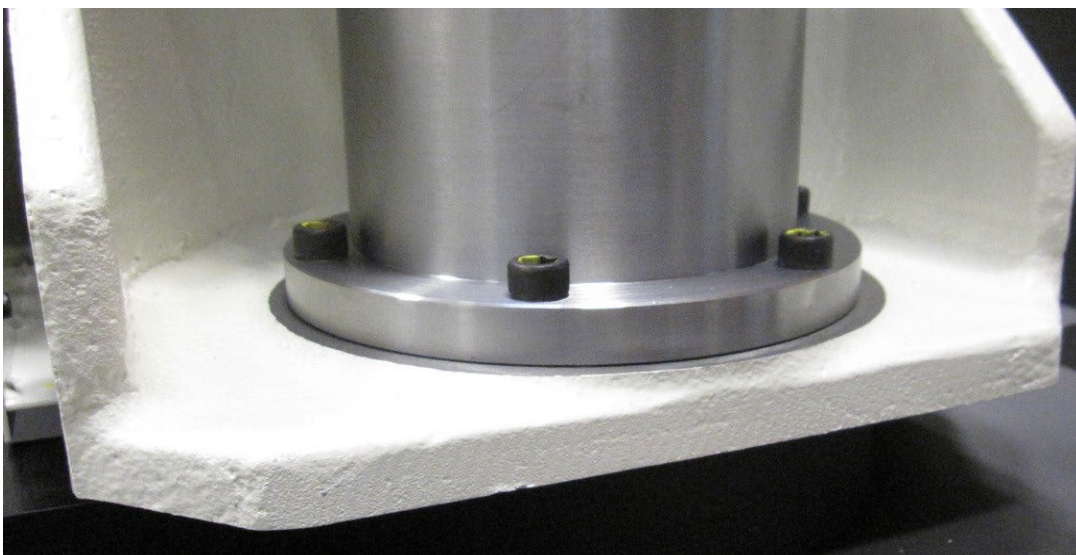
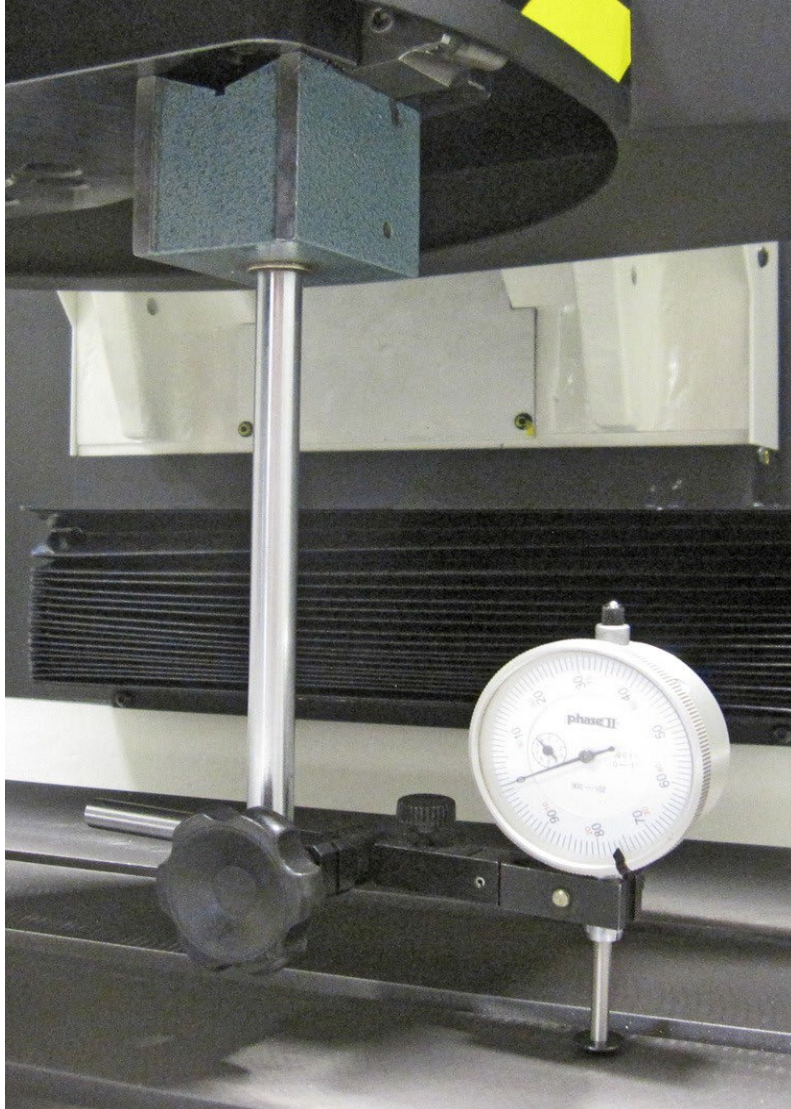
1. Mark cutterhead and spindle so they can be reassembled in the same position.
2. Remove cutterhead by removing the 4 screws holding it in place.
3. Remove cover.
4. Remove chip guard by removing the 4 flat head screws.

Cutterhead Tilt Adjustment

Remove all work pieces, fixturing and parallels, from the lower surface of the main base. Travel the spindle unit over to the center of the main base.

 **CAUTION** Turn off all power to the machine before continuing.

1. Mount an indicator to the cutterhead.
2. Adjust the cutterhead down until the indicator arm is in contact with the deck surface and the indicator is reading .010". (see below)
3. Zero the indicator.
4. Manually rotate the cutterhead clockwise.
5. The left, leading edge, of the cutterhead should be .0025 to .004 inch lower than the right, trailing edge, of the cutterhead.
6. If the tilt is not within this tolerance, it will need to be adjusted.
7. Loosen the 6 allen head bolts holding the outer spindle. (see below)
8. If the spindle needs to be tilted to the left, install shim stock on right side to correct the tilt.
9. If the spindle needs to be tilted to the right, install shim stock on left side to correct the tilt.
10. If the spindle needs to be tilted to the front, install shim stock on back side to correct the tilt.
11. If the spindle needs to be tilted to the back, install shim stock on front side to correct the tilt.
12. Tighten the six allen head bolts firmly.
13. Recheck tilt with dial indicator to be sure it is correct.
14. Remove the indicator holder from the cutterhead when adjustment is completed.



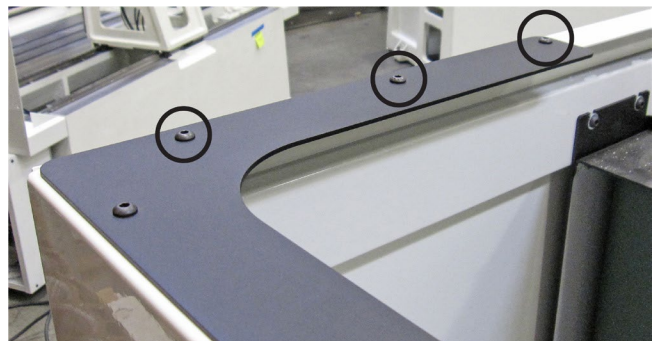
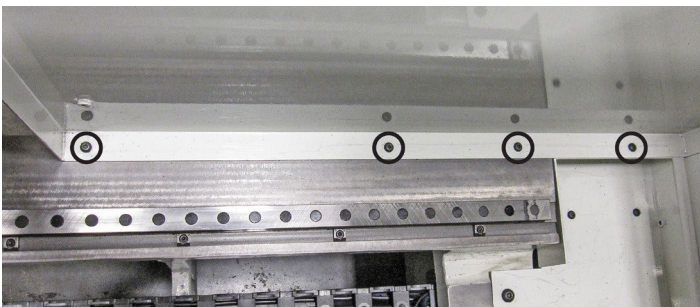
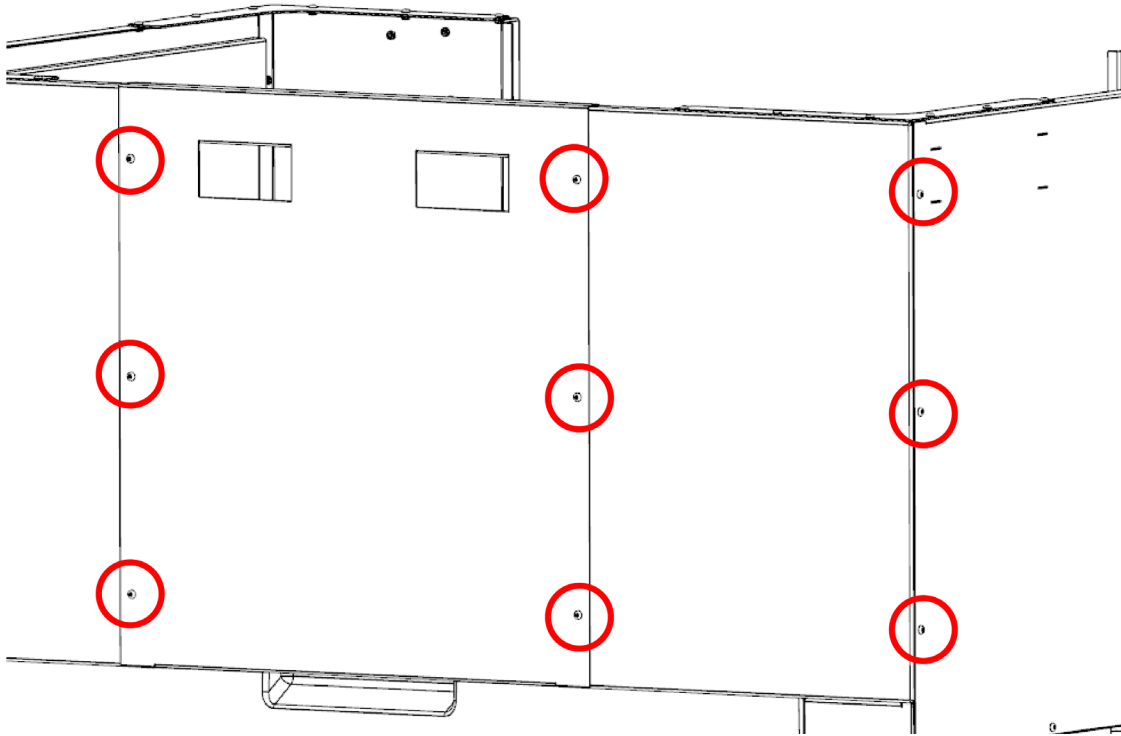
Horizontal Ballscrew Removal and Replacement

Move the carriage to the center of the machine and press the E-Stop button.

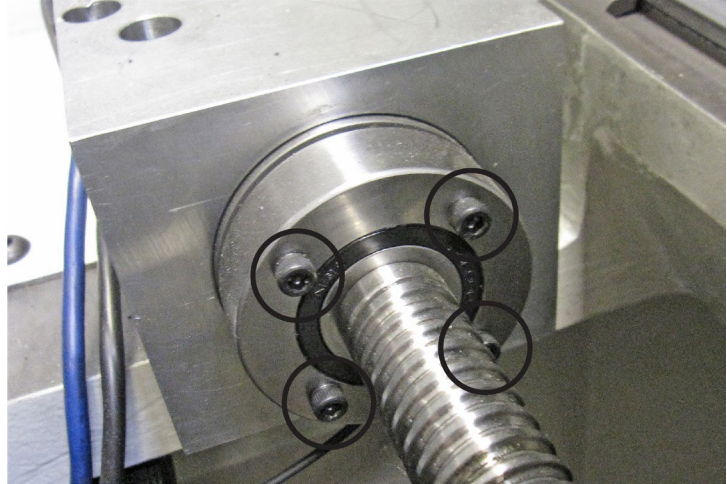
CAUTION *Disconnect all power to the machine before continuing*

Do the following procedure while at the back of the machine.

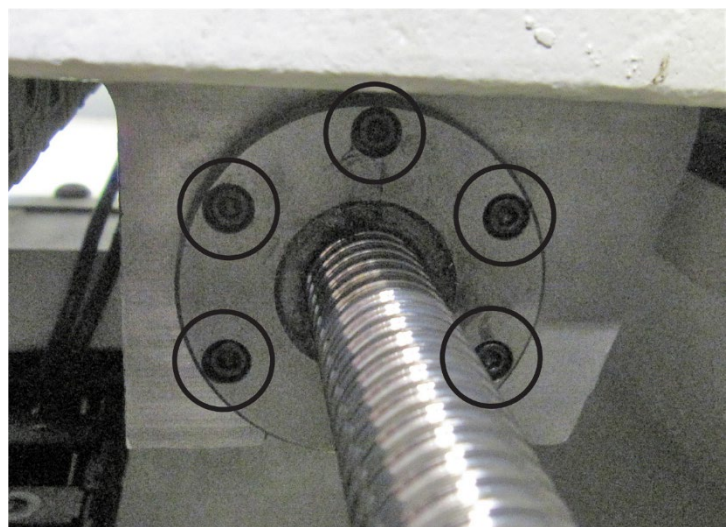
1. Remove the 3 rear panels. Remove 6 BHCS to take off center panel. Remove 3 BHCS on each side, 4 BHCS at the bottom, and 3 BHCS on the top to take off each side panel.



2. Remove the 4 SHCS holding the support bearing (7313)



3. Remove the 5 SHCS on the ballscrew nut (7313A)



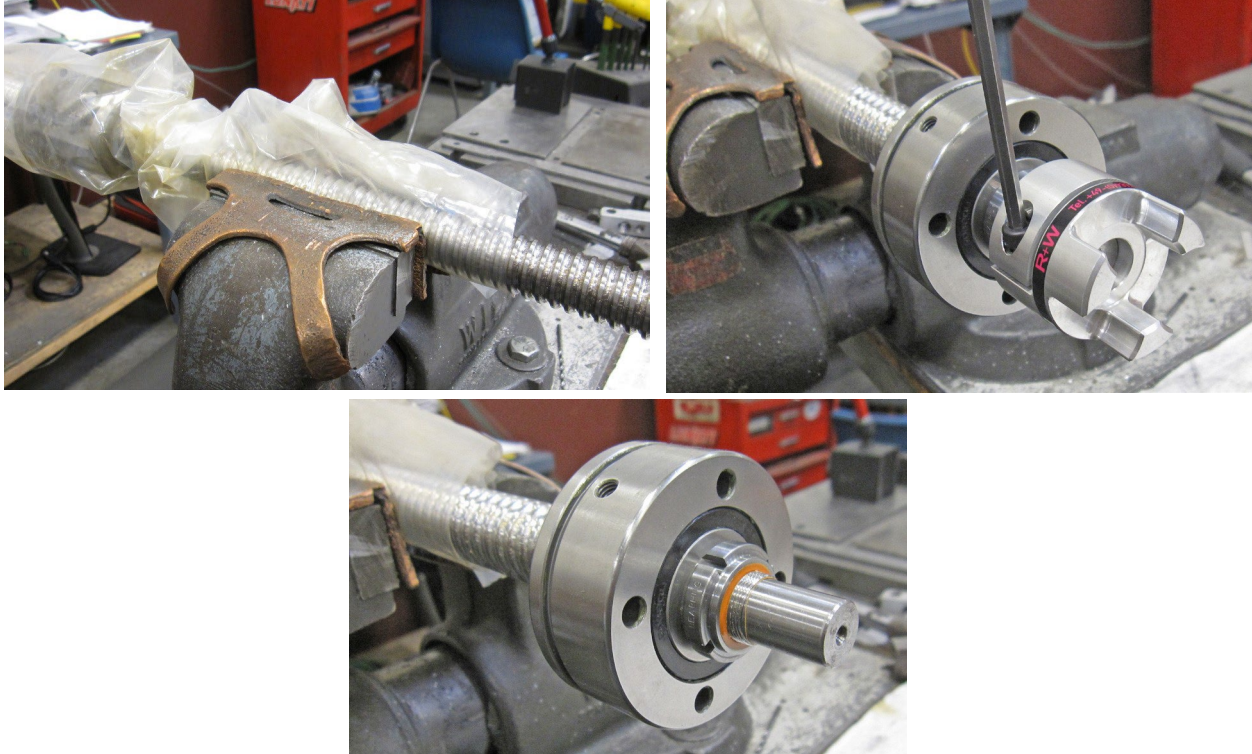
4. Remove ballscrew support (7303A)

5. Remove ballscrew from machine



6. With ballscrew held in a vice with soft jaws, remove the coupler (7316A), lock nut (6777C), and bearing (7313)

Note: Be sure when removing the bearing, that the inner race does not come apart.



7. Reassemble new ballscrew
8. Tighten lock nut enough to hold bearing in place
9. Replace coupler onto ballscrew
10. Place new ballscrew into machine and snug all bolts finger tight
11. Turn on the power and release the E-Stop and Home the machine
12. Run machine to the end of its horizontal travel and tighten the 2 SHCS that hold the ballscrew support (7303A) in place
13. Tighten the 5 SHCS that hold the ballscrew nut to the carriage
14. Run the machine toward the Home position just far enough to allow access to the 4 SHCS that hold the bearing (7313) onto the motor housing and tighten the 4 bolts
15. Test machine

Vertical Ballscrew Removal and Replacement

Move the horizontal carriage to the center of the machine.

Move the vertical carriage to the top of its travel.

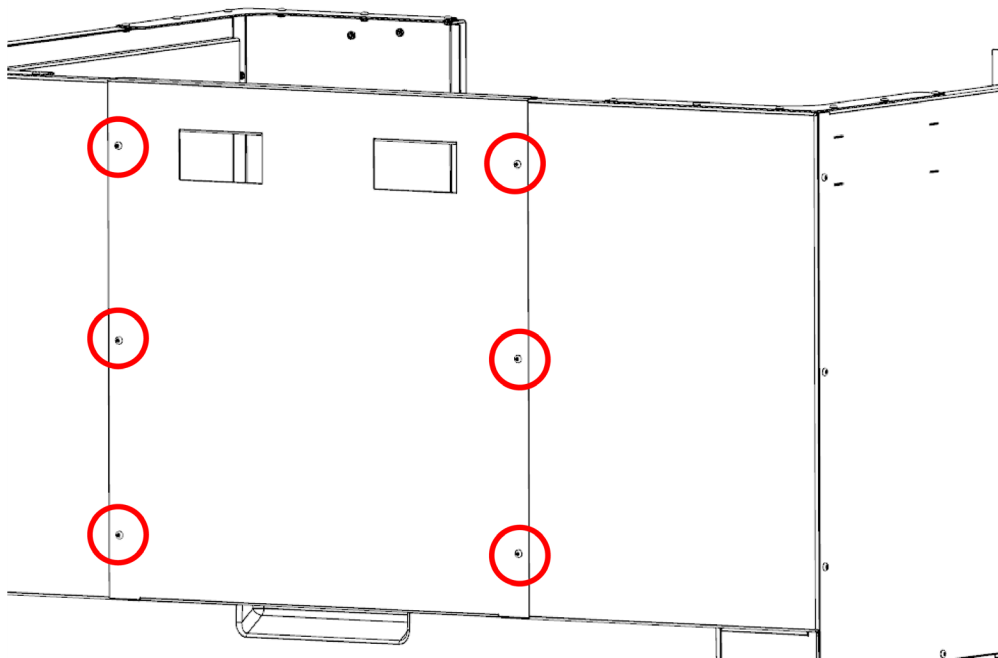
Place a block of wood under the chip shield as shown to support the carriage when the ballscrew is removed. It doesn't have to touch, but it needs to be close.



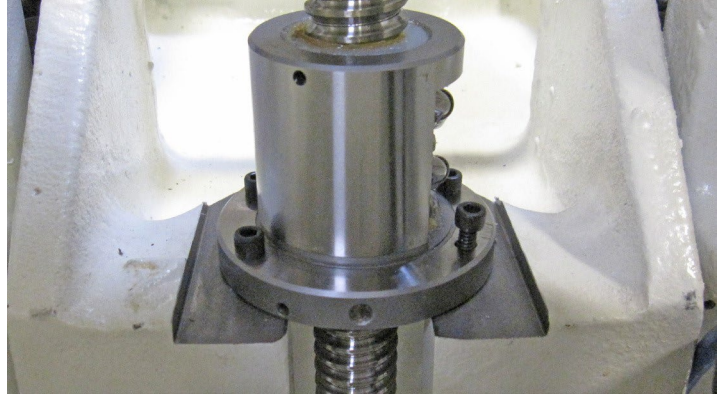
Press the E-Stop button.

CAUTION *Disconnect all power to the machine before continuing*

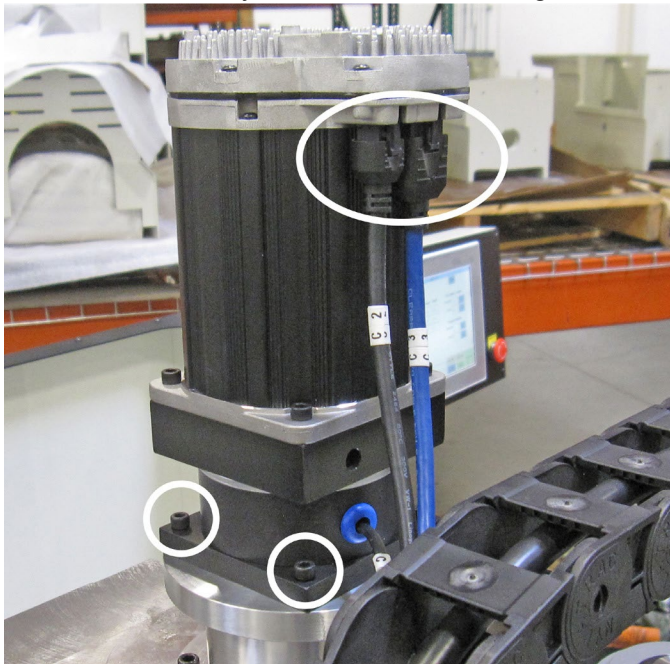
Go to the back of the machine and remove the rear center panel to access the carriage.



Remove the 5 SHCS that hold the ballscrew nut to the carriage. The carriage will drop down until the chip shield makes contact with the wood block that was placed under it.

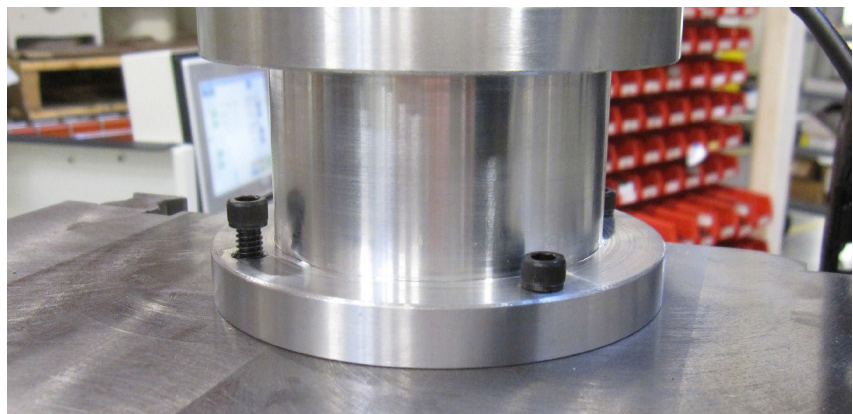


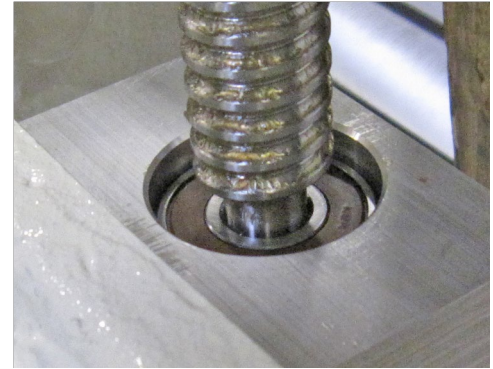
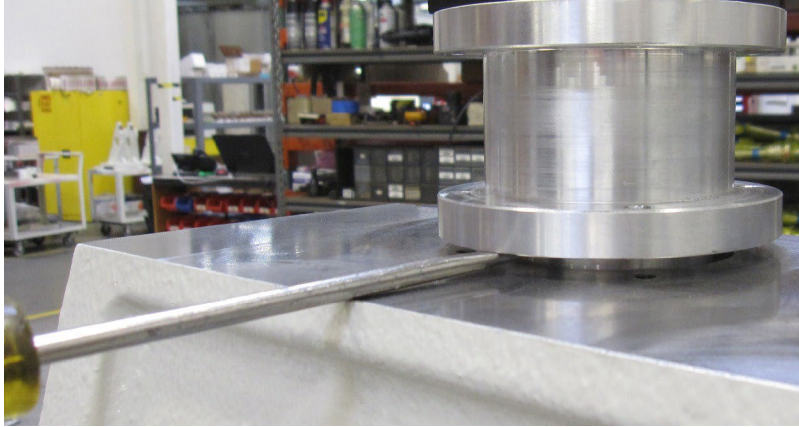
Remove the 2 wires connected to the ballscrew motor and then remove the 4 SHCS that hold the motor and brake assembly to the ballscrew housing. Set the motor assembly on carriage as shown.



Remove the 4 SHCS holding the ballscrew housing to the top of the carriage.

Lift the ballscrew assembly out of the lower bearing. If needed use a screwdriver or pry bar to lift the ballscrew out of the bearing.

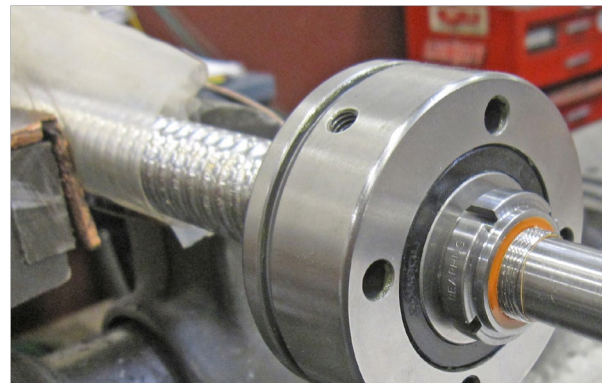
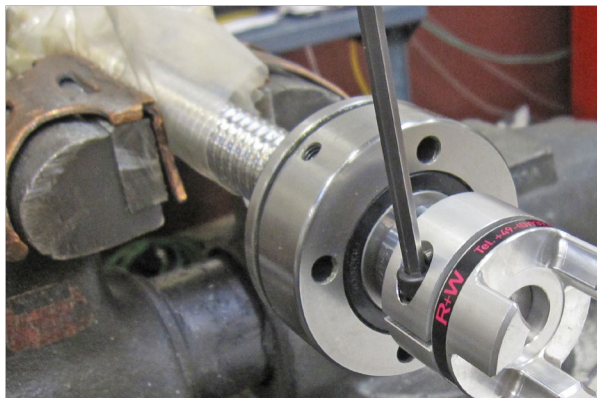
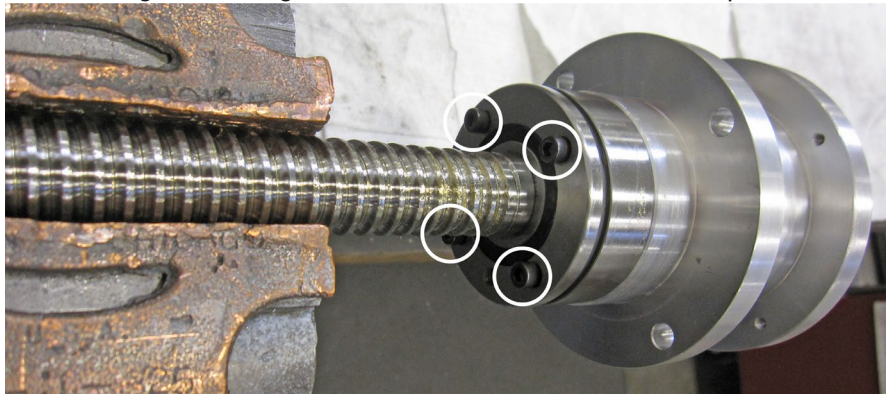




Remove the ballscrew assembly from the machine.

With ballscrew held in a vice with soft jaws, remove 4 SHCS holding the bearing assembly to the housing, then remove the coupler, lock nut, and bearing.

Note: Be sure when removing the bearing, that the inner race does not come apart.



Reassemble new ballscrew with bearing and lock nut.

Tighten lock nut enough to hold bearing in place.

Replace coupler onto ballscrew.

Replace housing and tighten 4 SHCS holding it to bearing.

Place new ballscrew into machine and snug all bolts finger tight.

Replace motor and cables.

Turn on power to machine and release the E-Stop.

Home machine.

Remove block of wood.

Run horizontal carriage to the center of the bed.

Run vertical carriage down to bottom of travel.

Tighten 5 SHCS holding ballscrew nut to carriage.

Run vertical carriage up to the top of its travel and tighten 4 SHCS in housing and then tighten the 4 SHCS holding bearing to housing.

Test machine.

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

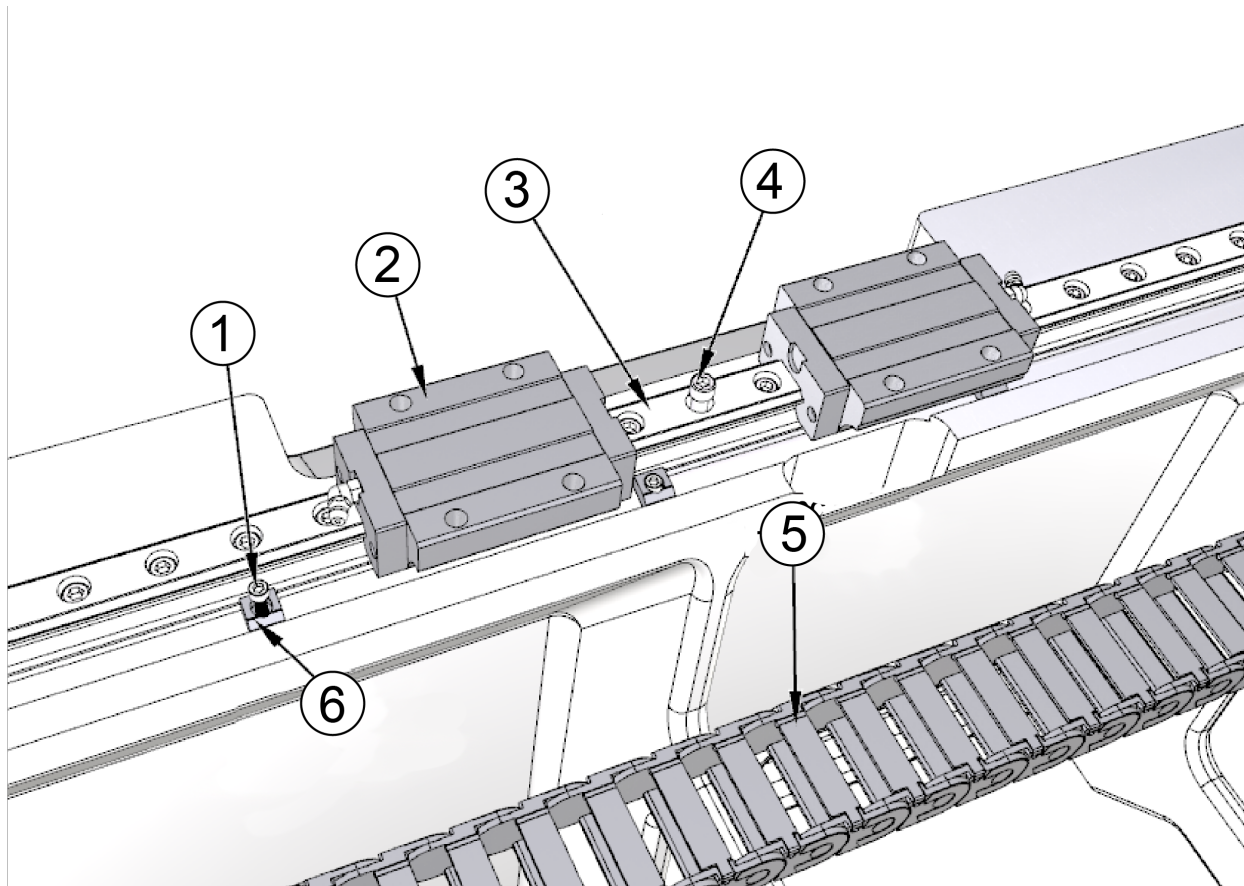
MACHINE PARTS

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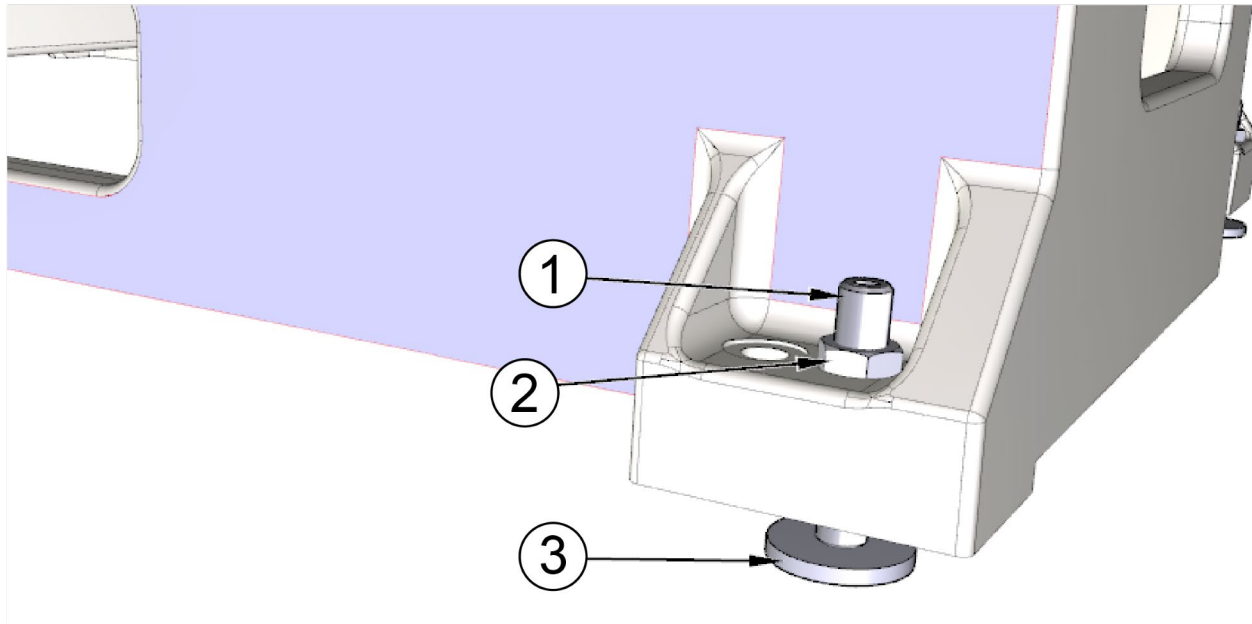
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Machine Parts

Base Assembly Parts



ITEM	PART NUMBER	DESCRIPTION
1	MF-2	S.H.C.S. #8-32 X 1/2"
2	-	LINEAR RAIL CAR
3	7341D 7314F	RAIL ASSEMBLY, X-AXIS, ROLLER LINEAR – S86 RAIL ASSEMBLY, X-AXIS, ROLLER LINEAR – S85
4	MF-15A	S.H.C.S. 1/4-20 X 7/8"
5	7319C 7319E	CARRIER, CABLE X-AXIS – S86 CARRIER, CABLE X-AXIS – S85
6	7314A	CLAMP, LINEAR RAIL

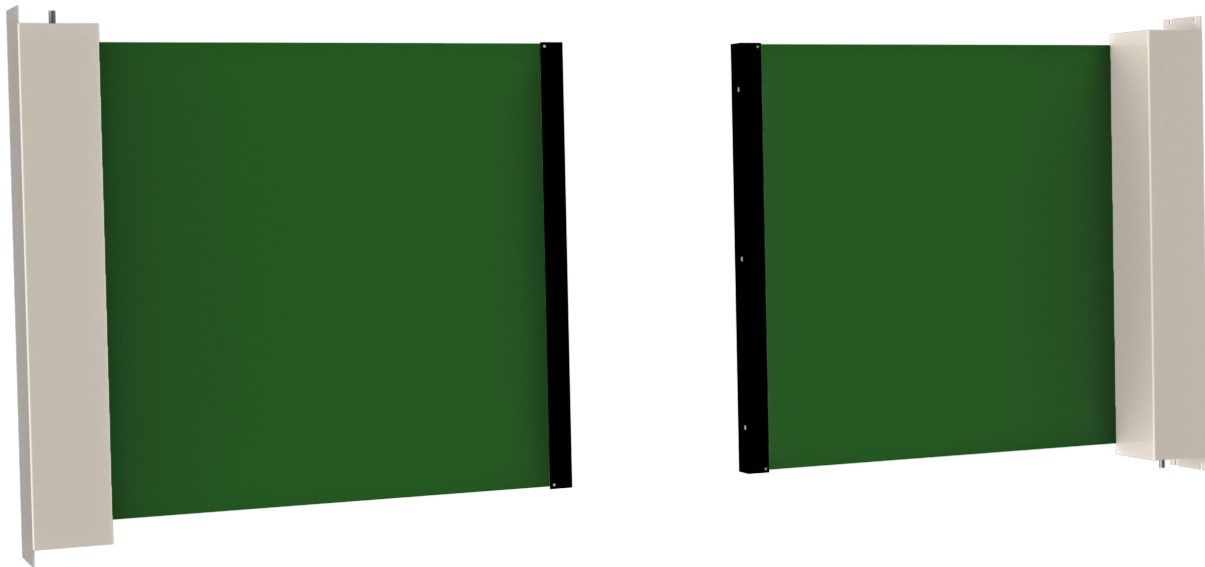


ITEM	PART NUMBER	DESCRIPTION
1	7170	SOCKET SET SCREW, 3/4-10 X 4", SQUARE HEAD
2	502-1-12F	NUT, JAM, 3/4-10
3	7300G	PAD, LEVELING

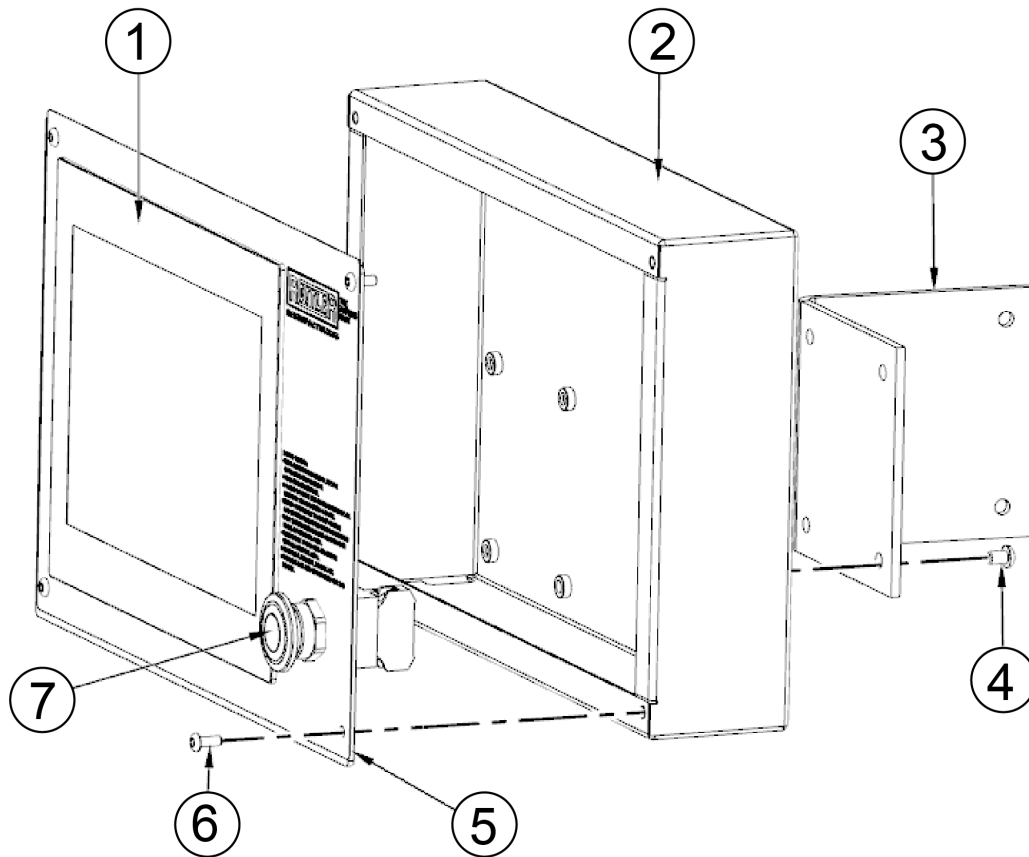
7326 Chip Curtains

Sold only as complete Assemblies. Service parts not available.

One each, machine uses 2 assemblies.

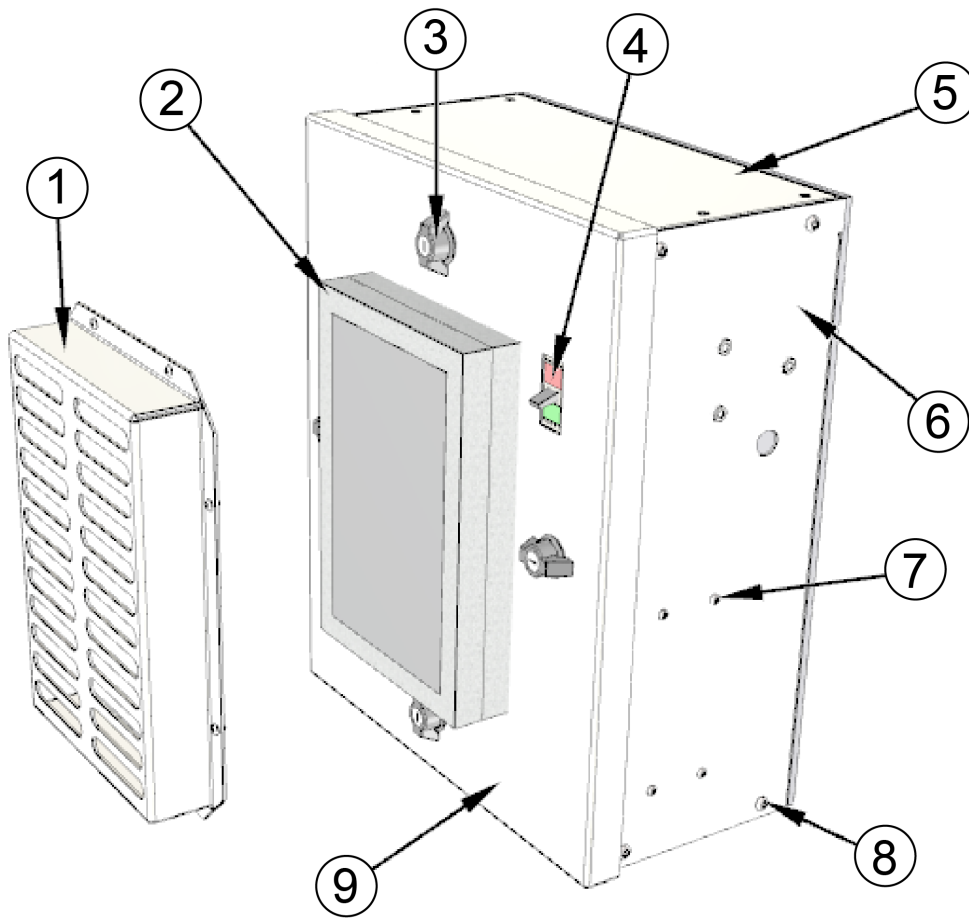


Control Panel Assembly Parts

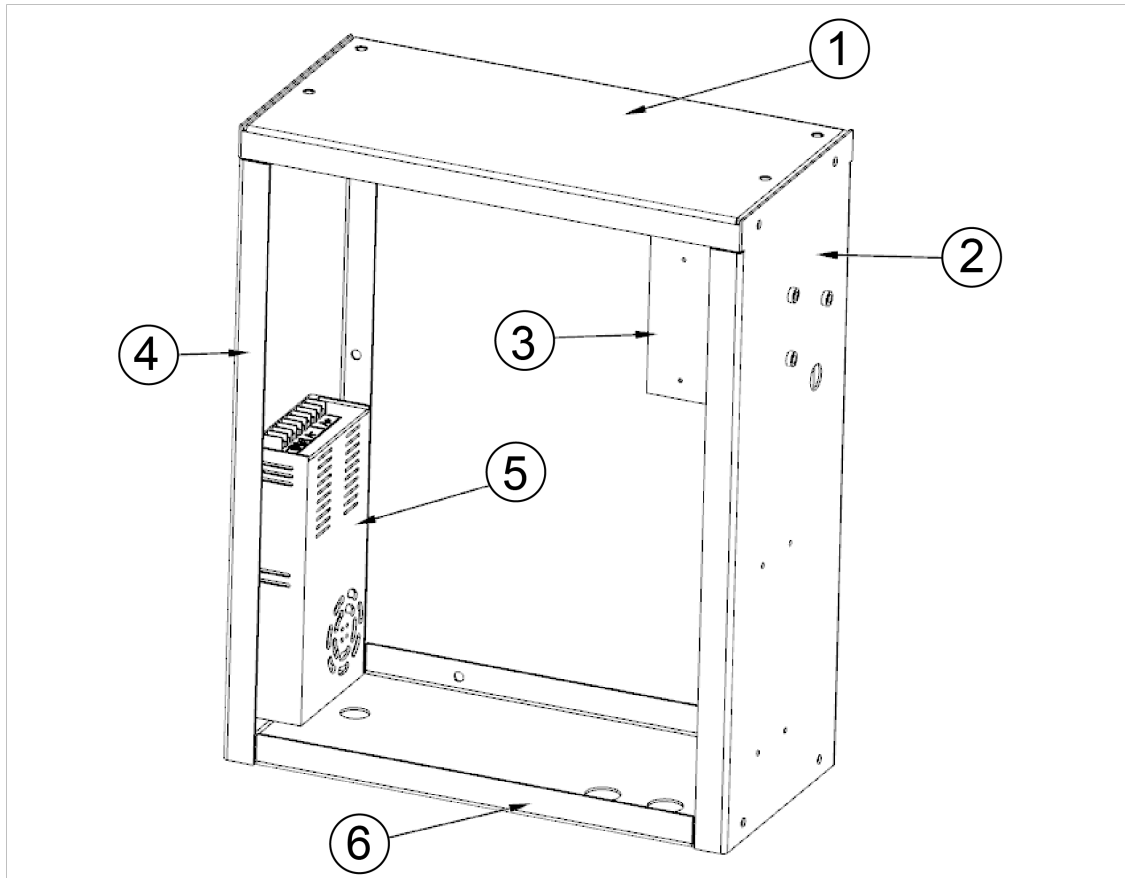


ITEM	PART NUMBER	DESCRIPTION
1	514-13-99A	10" TOUCH SCREEN DISPLAY
2	7328E	ENCLOSURE, PENDANT
3	7328D	BRACKET, PENDANT ANGLE
4	MF-90	B.H.C.S. 1/4-20 X 1/2"
5	514-13-22G	PLATE, CONTROL PANEL
6	MF-89B	B.H.C.S. #10-32 X 1/2"
7	6389D	PUSHBUTTON, EMERGENCY STOP

Electrical Enclosure Parts

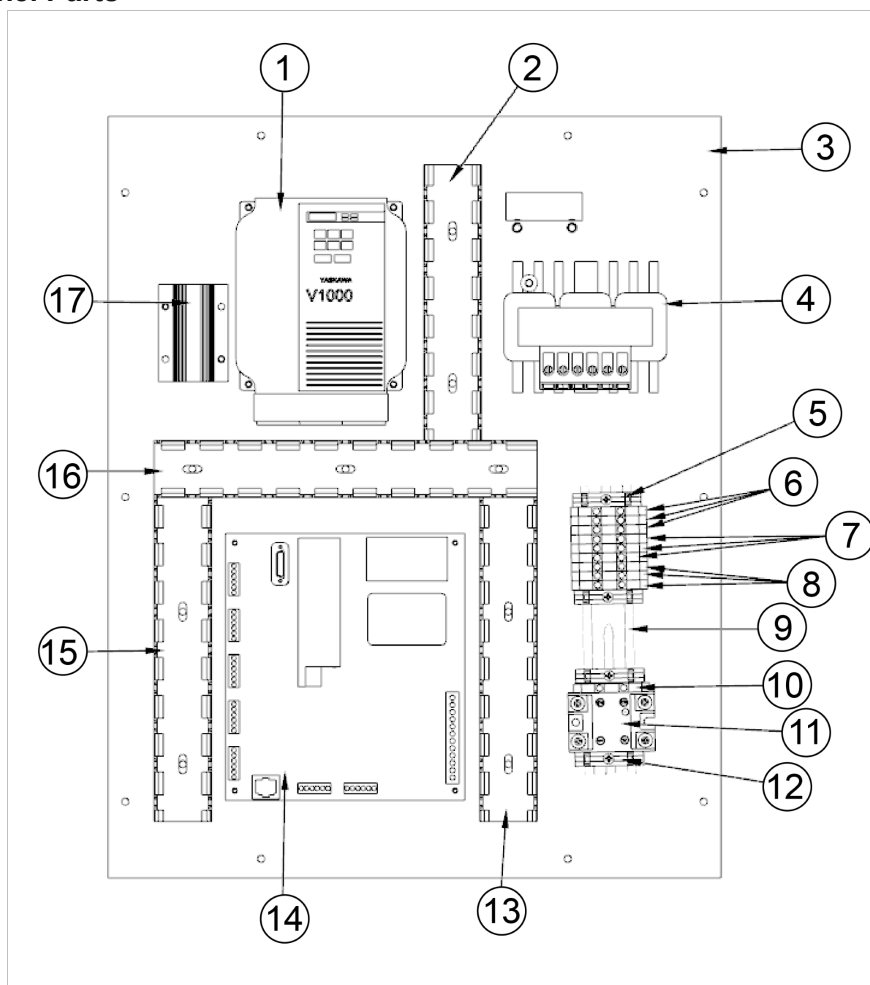


ITEM	PART NUMBER	DESCRIPTION
1	514-7-48B	COVER, ELECTRICAL ENCLOSURE DOOR FILTER
2	514-7-48C	FILTER, DOOR
3	9030E	DOOR LATCH – ELECTRICAL ENCLOSURE
4	9035G	CIRCUIT BREAKER – 30 AMP – MAIN POWER
5	514-7-47R	TOP PANEL
6	514-7-47U	RIGHT SIDE PANEL
7	MF-86	B.H.C.S. #8-32 X 1/4"
8	MF-248	B.H.C.S. 1/4-20 X 3/8"
9	514-7-47Q	DOOR WITH FOAM GASKET



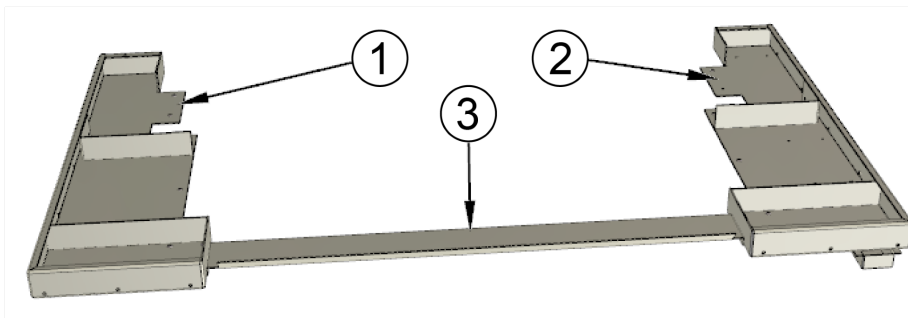
ITEM	PART NUMBER	DESCRIPTION
1	514-7-47R	TOP PANEL
2	514-7-47U	RIGHT SIDE PANEL
3	9030T	BRACKET, SWITCH - ELECTRICAL
4	514-7-47T	LEFT SIDE PANEL
5	7560	POWER SUPPLY, 36V
6	514-7-47S	BOTTOM PANEL

Electrical Panel Parts



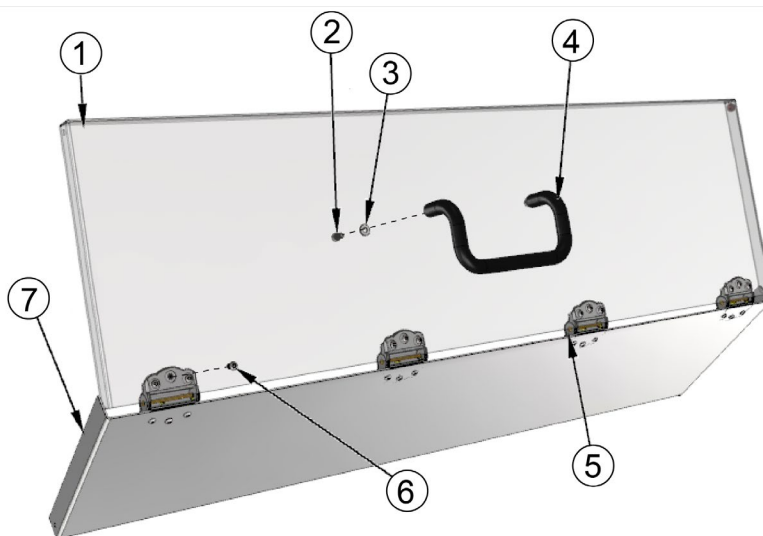
ITEM	PART NUMBER	DESCRIPTION
1	502-36-48C	VECTOR DRIVE – 2 HP, 1 PHASE, 240V
2	6554L	DUCT, WIRING (1 ½" X 2") 7.25"
3	514-7-48E	PANEL, ELECTRICAL ENCLOSURE, BACK
4	502-36-42H	REACTOR, LINE (CHOKER) AC FREQUENCY INVERTER
5	504-35-3M	CAP, DIN RAIL
6	514-7-74C	TERMINAL BLOCK – BLUE
7	514-7-74D	TERMINAL BLOCK – GREY
8	514-7-74E	TERMINAL BLOCK – EARTH GROUND
9	504-35-3F	DUCT, WIRING (1 ½" X 2") 9"
10	514-7-74D	TERMINAL BLOCK – GREY
11	7682	RELAY, SOLID STATE
12	504-35-3M	CAP, DIN RAIL
13	6554L	DUCT, WIRING (1 ½" X 2") 8.5"
14	514-13-45A	CONTROL BOARD ASSEMBLY
15	6554L	DUCT, WIRING (1 ½" X 2") 8.5"
16	6554L	DUCT, WIRING (1 ½" X 2") 10"
17	502-36-48	INVERTER, FREQUENCY

Machine Enclosure Base Parts



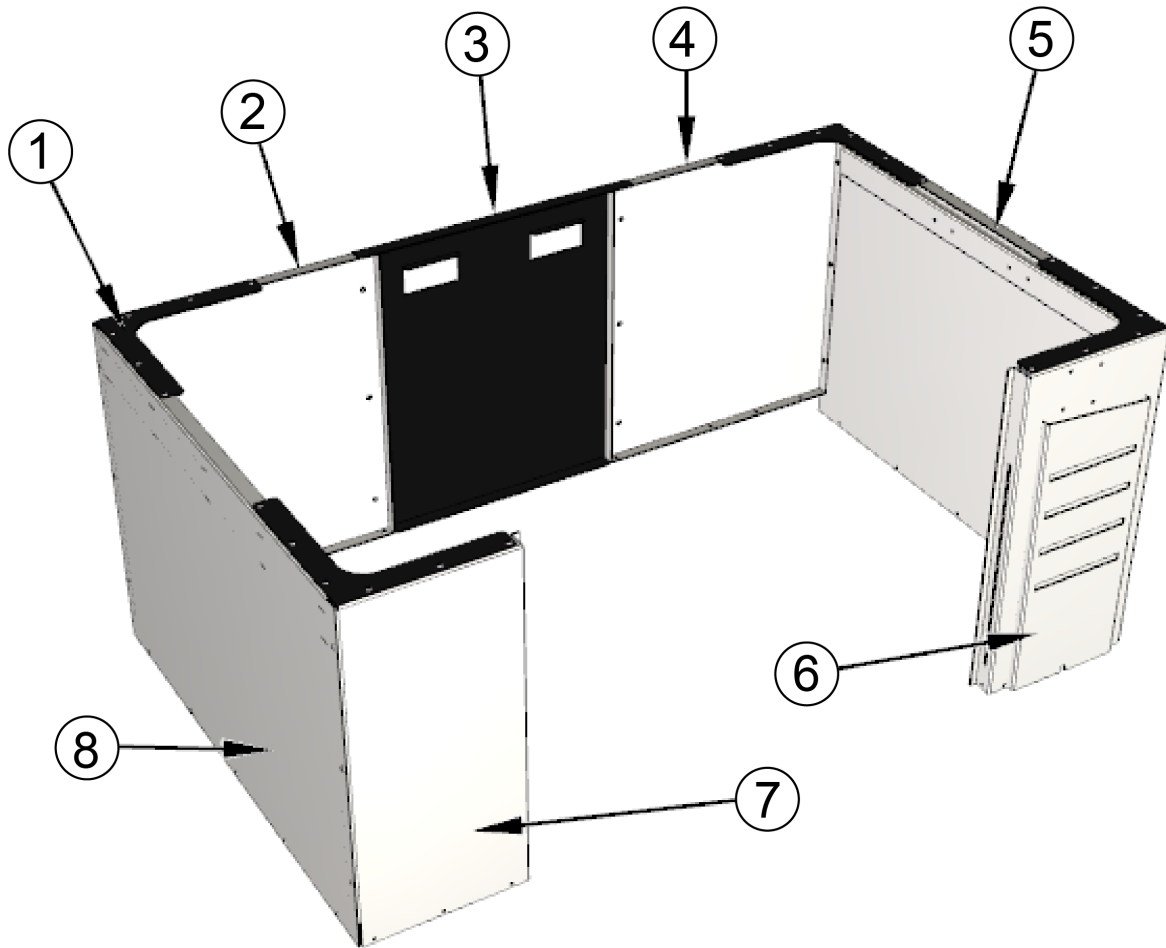
ITEM	PART NUMBER	DESCRIPTION
1	7327B	LEFT SIDE SUPPORT
2	7327A	RIGHT SIDE SUPPORT
3	7323A 7323H	DOOR SILL, S85 DOOR SILL, S86

Machine Enclosure Door Parts



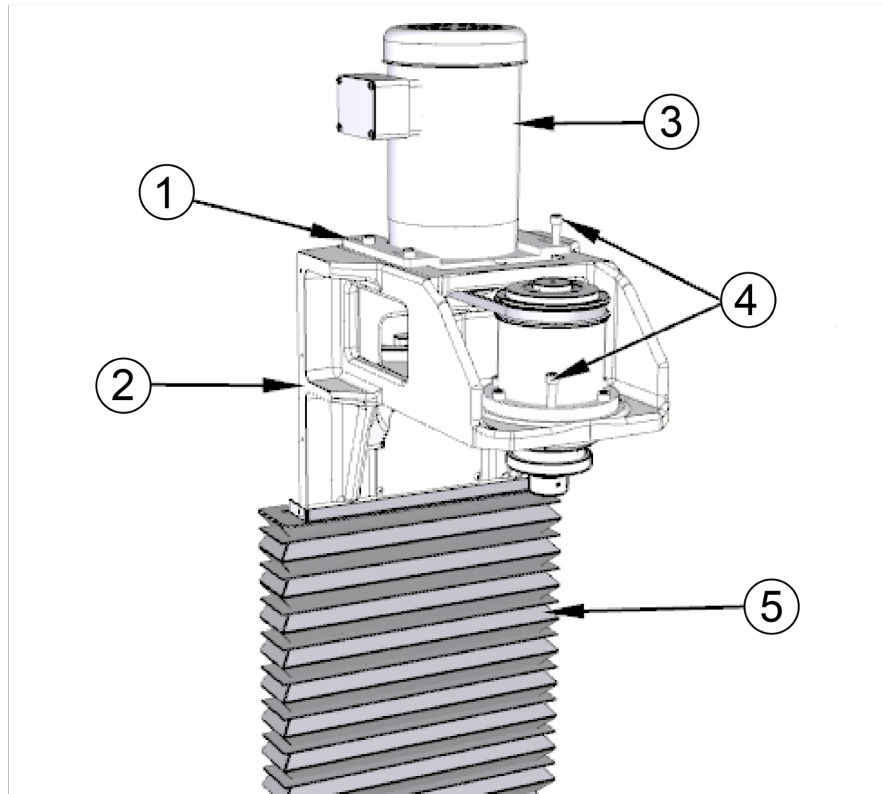
ITEM	PART NUMBER	DESCRIPTION
1	7323D 7323F	DOOR, UPPER – S86 DOOR, UPPER – S85
2	MF-21A	S.H.C.S. 5/16-18 X 1/2"
3	MF-177	FLAT WASHER, 5/16"
4	514-14-56D	HANDLE, CABINET
5	7329C	HINGE, SPRING
6	MF-88A	B.H.C.S. #10-24 X 1/2"
7	7323E 7323G	DOOR, LOWER – S86 DOOR, LOWER – S85

Machine Enclosure Surround Parts

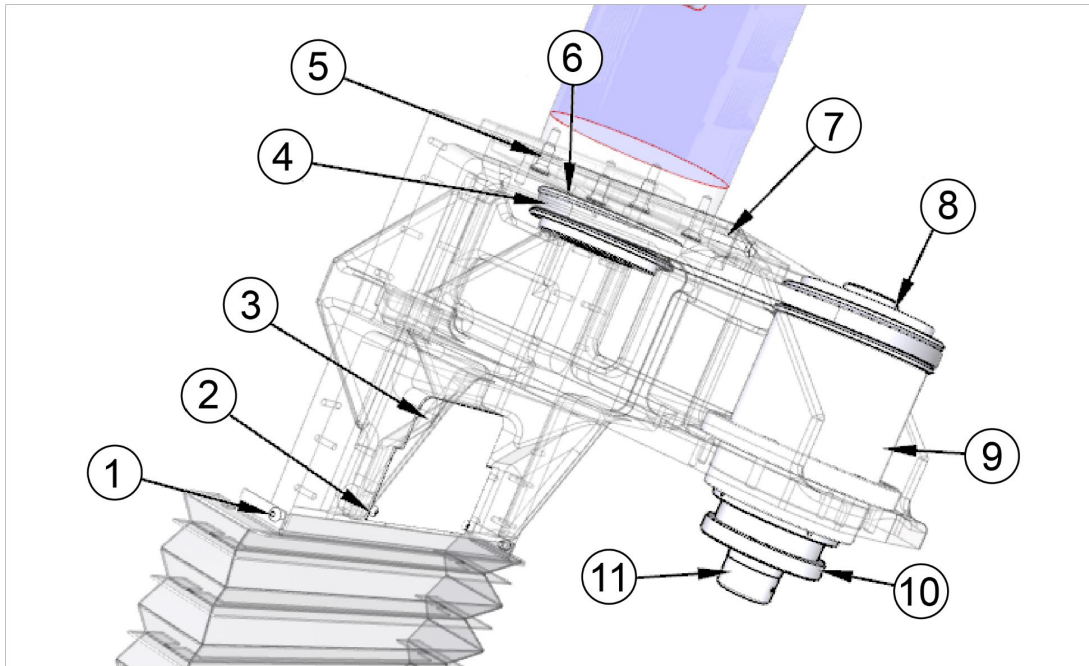


ITEM	PART NUMBER	DESCRIPTION
1	7320D	GUSSET
2	7320E 7320R	REAR PANEL, S86 REAR PANEL, S85
3	7320N	REAR REMOVABLE PANEL
4	7320E 7320R	REAR PANEL, S86 REAR PANEL, S85
5	7328A	SIDE PANEL
6	7328B	FRONT, RIGHT SIDE PANEL
7	7328C	FRONT, LEFT SIDE PANEL
8	7328A	SIDE PANEL

Spindle Assembly Parts

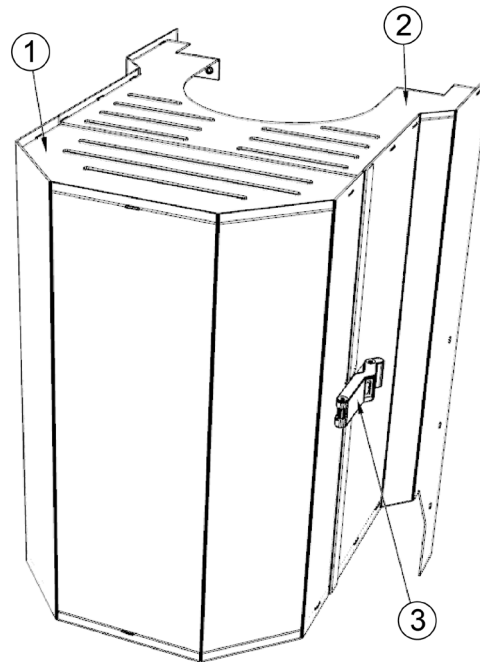


ITEM	PART NUMBER	DESCRIPTION
1	7304B	MOUNT, MOTOR SPINDLE
2	7306F	HOUSING, SPINDLE
3	507-6-3G	MOTOR
4	MF-32	S.H.C.S. $\frac{3}{8}$ -16 X 1 $\frac{1}{4}$ "
5	7326A	COVER, BELLOWS, Z-AXIS

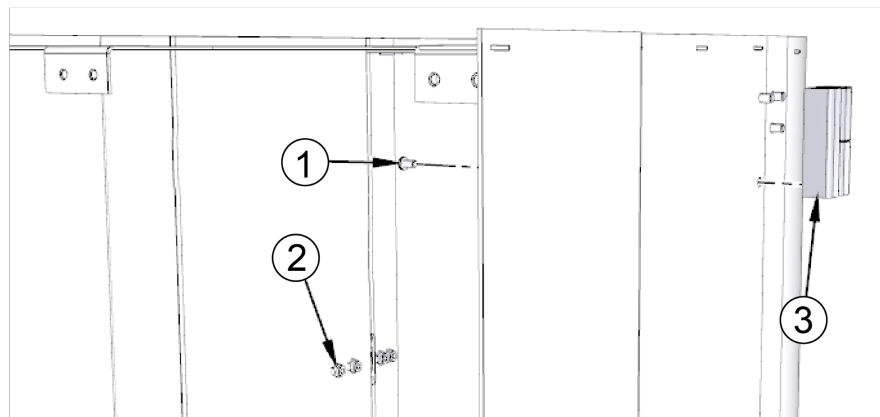


ITEM	PART NUMBER	DESCRIPTION
1	MF-11	S.H.C.S. 1/4-20 X 3/8"
2	MF-88	B.H.C.S. #10-24 X 3/8"
3	7304Q	COVER, BALLSCREW, FRONT
4	7316E	BELT, SPINDLE DRIVE
5	-	F.H.C.S. 3/8-16 X 1"
6	7316D	SPROCKET, DRIVE & DRIVEN
7	-	H.H.C.S. 1/4-20 X 1 3/4"
8	7316D	SPROCKET, DRIVE & DRIVEN
9	7315H	SPINDLE, OUTER
10	7315K	SPINDLE, INNER SPINDLE CARTRIDGE
11	7225S	BUSHING – ADAPTER

Spindle Cover Parts

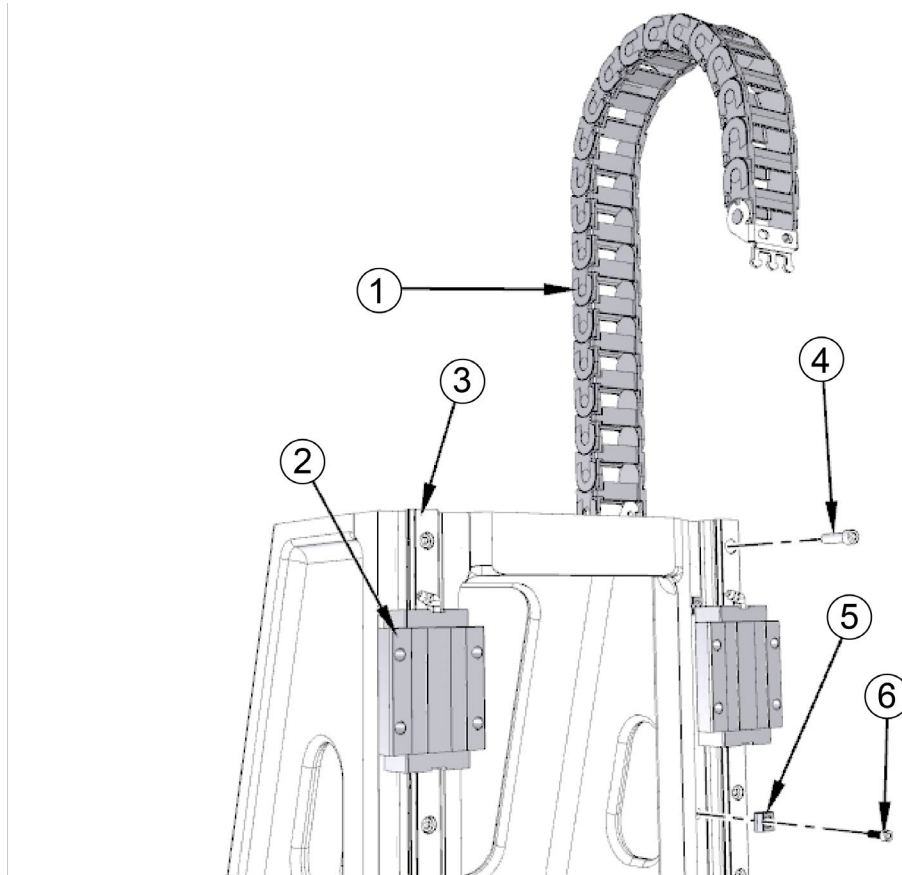


ITEM	PART NUMBER	DESCRIPTION
1	7304M	COVER, FRONT, SPINDLE HOUSING
2	7304P	COVER, REAR, SPINDLE HOUSING
3	7304K	LATCH, DOOR



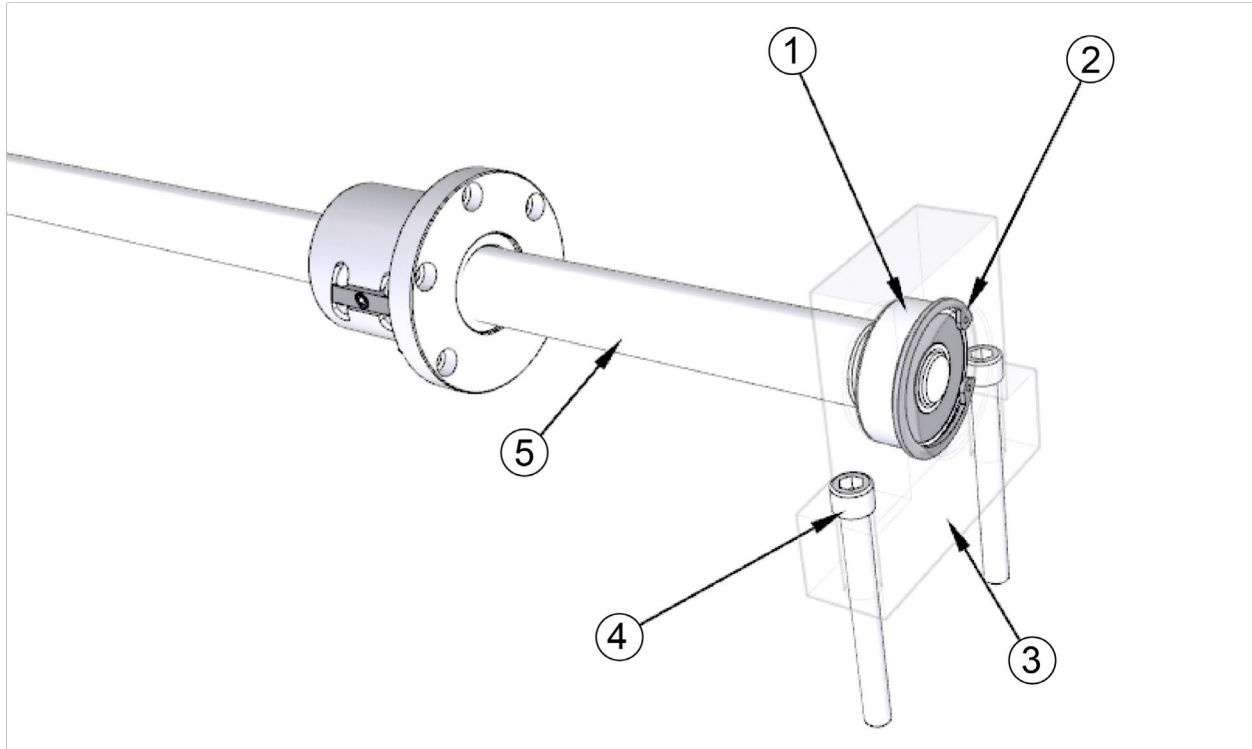
ITEM	PART NUMBER	DESCRIPTION
1	MF-88	B.H.C.S. #10-24 X 3/8"
2	MF-186D	NYLOCK NUTS #8-32
3	504-34-76E	HINGE, COVER

Tower Assembly Parts

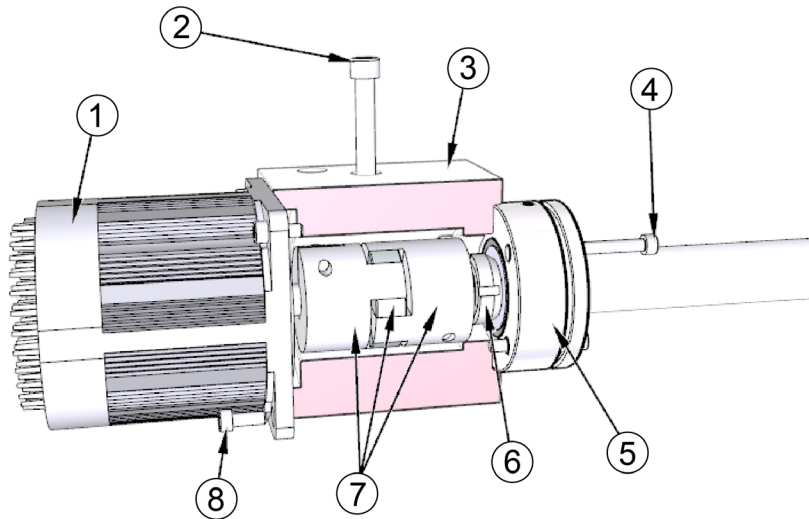


ITEM	PART NUMBER	DESCRIPTION
1	7319D	CHAIN, Z-AXIS CABLE
2	7314	Z-AXIS LINEAR RAIL CAR (SOLD WITH 7314E ASS'Y)
3	7314E	RAIL ASSEMBLY, Z-AXIS ROLLER LINEAR
4	MF-15A	S.H.C.S. 1/4-20 X 7/8"
5	7314A	CLMAP, LINEAR RAIL
6	MF-2	S.H.C.S. #8-32 X 1/2"

X-Axis Ballscrew Assembly Parts

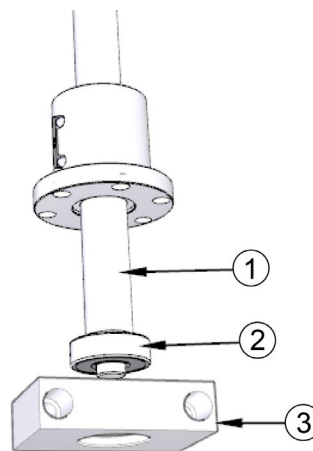


ITEM	PART NUMBER	DESCRIPTION
1	6778C	BEARING
2	7306C	RING, SNAP
3	7303A	MOUNT, X-AXIS SUPPORT BEARING
4	MF-28E	S.H.C.S. 5/16-18 X 3"
5	7313D 7313H	BALL SCREW ASSEMBLY, X-AXIS – S86 BALL SCREW ASSEMBLY, X-AXIS – S85

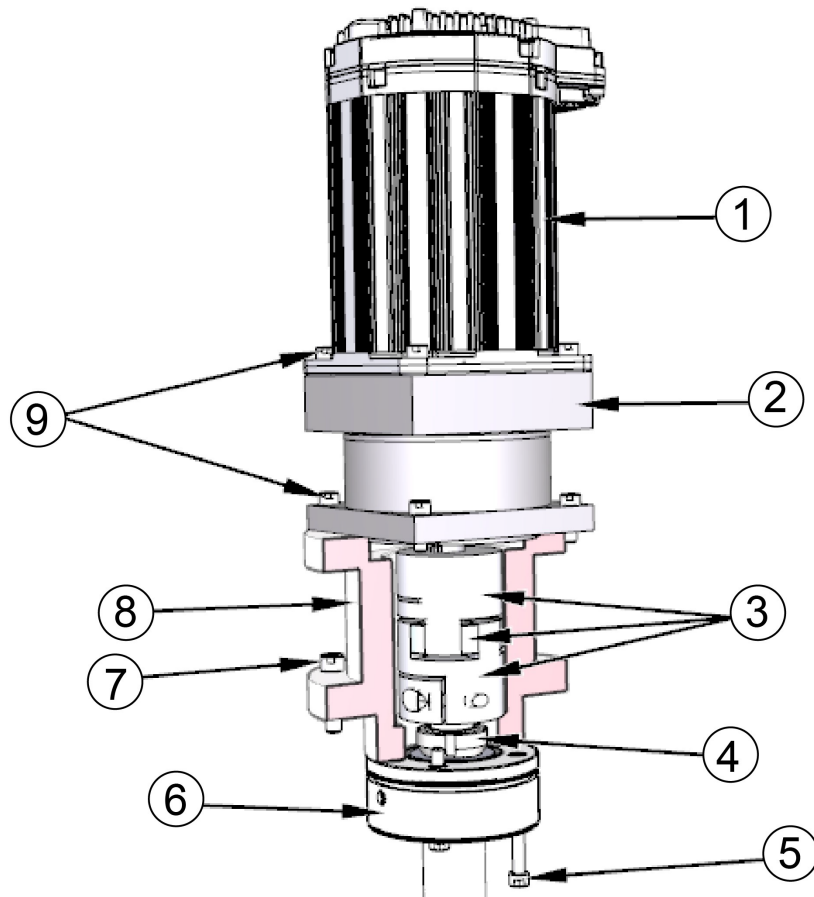


ITEM	PART NUMBER	DESCRIPTION
1	7318	MOTOR
2	MF-28E	S.H.C.S. 5/16-18 X 3"
3	7303	MOUNT, X-AXIS BEARING MOTOR
4	-	S.H.C.S. #10-24 X 1 3/8"
5	7313	BEARING, BALLSCREW SUPPORT
6	6777C	NUT, LOCK
7	7316A	COUPLING, X-AXIS MOTOR DRIVE
8	MF-5A	S.H.C.S. #10-24 X 1/2"

Z-Axis Ballscrew Assembly Parts



ITEM	PART NUMBER	DESCRIPTION
1	7313A	ASSEMBLY, BALL SCREW FOR Z-AXIS
2	6778C	BEARING, LOWER-VERTICAL SHAFT
3	7313C	SUPPORT, BALLSCREW



ITEM	PART NUMBER	DESCRIPTION
1	7318	MOTOR
2	7318A	BRAKE, Z-AXIS MOTOR
3	7316A	COUPLING, Z-AXIS MOTOR DRIVE
4	6777C	NUT, LOCK
5	-	S.H.C.S. #10-24 X 1 3/8"
6	7313	BEARING, BALLSCREW SUPPORT
7	MF-15	S.H.C.S. 1/4-20 X 1"
8	7313B	MOUNT, Z-AXIS MOTOR
9	MF-5	S.H.C.S. #10-24 X 5/8"

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) NAPA Lithe-Ease Grease



SAFETY DATA SHEET

1. Identification

Product Identifier NAPA® White Lithium Grease

Other Means of Identification
Product Code No. 095037 (Item# 1008003)

Recommended Use Lubricating grease
Recommended Restrictions None known

Manufacturer/Importer/Supplier/Distributor Information
Manufactured or Sold by:

Company Name CRC Industries, Inc.
Address 885 Louis Dr.
 Warminster, PA 18974 USA

Telephone

General Information	215-674-4300
Technical Assistance	800-251-3168
Customer Service	800-272-4620
24-Hour Emergency	800-424-9300 (US)
(CHEMTREC)	703-527-3887 (International)

Website www.crcindustries.com

2. Hazard(s) Identification

Physical Hazards	Flammable aerosols Gasses under pressure	Category 1 Liquefied gas
Health Hazards	Skin corrosion/irritation Serious eye damage/eye irritation Reproductive Toxicity (fertility) Specific target organ toxicity, single exposure Aspiration hazard	Category 2 Category 2B Category 2 Category 3 narcotic effects Category 1
Environmental Hazards	Hazardous to the aquatic environment, acute hazard Hazardous to the aquatic environment, long-term hazard	Category 2 Category 2
OSHA Defined Hazards	Not classified	

Label Elements



Signal Word D

Hazard Statement Extremely flammable aerosol. Contains gas under pressure; may explode if heated. May be fatal if swallowed and enters airways. Causes skin irritation. Causes eye irritation. May cause drowsiness or dizziness. Suspected of damaging fertility. Toxic to aquatic life with long lasting effects.

Precautionary Statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. No spoking. Do not spray on an open flame or other ignition source. Pressurized container. Do not pierce or burn, even after use. Do not apply while equipment is energized. Extinguish all flames, pilot lights and heaters. Vapors will

accumulate readily and may ignite. Use only with adequate ventilation; maintain ventilation during use and until all vapors are gone. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation, or leave the area. Avoid breathing mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response	If swallowed; immediately call a poison center/doctor. DO NOT induce vomiting. If on skin; wash with plenty of water. If skin irritation occurs; get medical advice/attention. Take off contaminated clothing and wash before reuse. If inhaled; remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If in eyes; rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists; get medical advice/attention. If exposed or concerned; get medical advice/attention. Collect spillage
Storage	Store in a well-ventilated place. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Exposure to high temperature may cause can to burst.
Disposal	Dispose of contents/container in accordance with local/regional/national regulations
Hazard(s) not otherwise classified	Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

3. Composition/Information on Ingredients

Mixtures

Chemical Name	Common name and Synonyms	CAS Number	%
Liquefied petroleum gas		68476-86-8	30-40
2-methylpentane		107-83-5	20-30
Distillates (petroleum), hydrotreated heavy naphthenic		64742-52-5	10-20
Naphtha (petroleum), hydrotreated light		64742-49-0	10-20
n-hexane		110-54-3	3-5
Zinc oxide		1314-13-2	<1
2,2-dimethylbutane		75-83-2	<0.3
2,3-dimethylbutane		79-29-8	<0.3
3-methylpentane		96-14-0	<0.3
Calcium bis (dinonylnaphthalenesulphonate)		57855-77-3	<0.3

Specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid Measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell
Skin Contact	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content does not get into the lungs.

Most Important symptoms/effects, acute and delayed	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. Skin irritation. May cause redness and pain.
Indication of Immediate Medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General Information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting Measures

Suitable Extinguishing Media	Water fog. Foam. Carbon dioxide (CO ₂). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishable Media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may rupture when exposed to heat or flame. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Fire-fighting Equipment/Instructions	In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up.
General Fire Hazards	Extremely flammable aerosol. Contents under pressure. Pressurized container may rupture when exposed to heat or flame.

6. Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Remove all possible sources of ignition in the surrounding area. Keep out of low areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 of the SDS.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. The product is immiscible with water and will spread on the water surface. Prevent product from entering drains. Stop the flow of material if this is without risk. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see Section 13 of the SDS.

Environmental precautions Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses, or onto the ground. Use appropriate containment to avoid environmental contamination.

7. Handling and Storage

Precautions for safe handling Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. Protect containers from physical damage; do not drag, roll, slide, or drop. When moving containers, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport containers. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices. For product usage instructions, see the product label.

Conditions for safe storage, including any incompatibilities Level 3 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat, or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Avoid spark promoters. These alone may be insufficient to remove static electricity. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

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.

US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)			
Components	Type	Value	Form
Distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	PEL	5 mg/m3	Mist.
Naphtha (petroleum), hydrotreated light (CAS 64742-49-0)	PEL	2000 mg/m3 500 ppm 400 mg/m3	
n-hexane (CAS 110-54-3)	PEL	100 ppm 1800 mg/m3 500 ppm	
Zinc oxide (CAS 1314-13-2)	PEL	5 mg/m3 5 mg/m3 15 mg/m3	Respirable fraction Fume Total dust
US ACGIH Threshold Limit Values			

Components	Type	Value	Form
2,2-dimethylbutane (CAS 75-83-2)	STEL	1000 ppm	
2,3-dimethylbutane (CAS 72-29-8)	TWA	500 ppm	
	STEL	1000 ppm	
2-methylpentane (CAS 107-83-5)	TWA	500 ppm	
	STEL	1000 ppm	
3-methylpentane (CAS 96-14-0)	TWA	500 ppm	
	STEL	1000 ppm	
Distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	TWA	500 ppm	Inhalable fraction
	TWA	5 mg/m3	
n-hexane (CAS 110-54-3)	TWA	50 ppm	
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction
	TWA	2 mg/m3	Respirable fraction
US NIOSH: Pocket Guide to Chemical Hazards			
Components	Type	Value	Form
2,2-dimethylbutane (CAS 75-83-2)	Ceiling	1800 mg/m3	
	TWA	510 ppm 350 mg/m3 100 ppm	
2,3-dimethylbutane (CAS 79-29-8)	Ceiling	1800 mg/m3	
	TWA	510 ppm 350 mg/m3 100 ppm	
2-methylpentane (CAS 107-83-5)	Ceiling	1800 mg/m3	
	TWA	510 ppm 350 mg/m3 100 ppm	
3-methylpentane (CAS 96-14-0)	Ceiling	1800 mg/m3	
	TWA	510 ppm 350 mg/m3 100 ppm	
Distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	Ceiling	1800 mg/m3	
	STEL	10 mg/m3	Mist
	TWA	5 mg/m3	Mist

Naphtha (petroleum), hydrotreated light (CAS 64742-49-0)	TWA	400 mg/m ³	
n-hexane (CAS 110-54-3)	TWA	100 ppm 180 mg/m ³ 50 ppm	
Zinc oxide (CAS 1314-13-2)	Ceiling	15 mg/m ³	Dust
	STEL	10 mg/m ³	Fume
	TWA	5 mg/m ³ 5 mg/m ³	Fume Dust

Biological Limit Values

ACGIH Biological Exposure Indices				
Components	Value	Determinant	Specimen	Sampling Time
n-hexane (CAS 110-54-3)	0.4 mg/L	2,5-Hexanedione, without hydrolysis	Urine	*

* For sampling details, please see the source document.

Exposure Guidelines

US – California OELs: Skin Designation

n-hexane (CAS 110-54-3)

Can be absorbed through skin.

US ACGIH Threshold Limit Values: Skin Designation

n-hexane (CAS 110-54-3)

Can be absorbed through skin.

Appropriate Engineering Controls

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

Individual protection measures, such as personal protective equipment

Eye/face Protection

Wear safety glasses with side shields (or goggles).

Skin Protection

Hand Protection

Wear protective gloves such as: Nitrile, Polyvinyl chloride (PVC), Viton/butyl.

Other

Wear appropriate chemical resistant clothing.

Respiratory Protection

If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a self-contained breathing apparatus in confined spaces and for emergencies. Air monitoring is needed to determine actual employee exposure levels.

Thermal Hazards

Wear appropriate thermal protective clothing when necessary.

General Hygiene Considerations

Observe any medical surveillance requirements. When using, do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants

9. Physical and Chemical Properties

Appearance

Physical State

Liquid

Form

Aerosol. Grease.

Color

Off-white

Odor

Solvent

Odor Threshold

Not available

pH

Not available

Melting point/freezing point

-244.7°F (-153.7°C) estimated

Initial boiling point and boiling range

118.4°F (48°C) estimated

Flash Point	< 0°F (-17.8°C) Tag Closed Cup
Evaporation Rate	Fast
Flammability (solid, gas)	Not available
Upper/lower Flammability or explosive limits	
Flammability limit – lower (%)	1% estimated
Flammability limit – upper (%)	8% estimated
Vapor Pressure	2377.8 hPa estimated
Vapor Density	> 1 (air=1)
Relative Density	0.64 estimated
Solubility (water)	Insoluble
Partition Coefficient (n-octanol/water)	Not available
Auto-ignition Temperature	437°F (225°C) estimated
Decomposition Temperature	Not available
Viscosity (kinematic)	Not available
Percent Volatile	98.4% estimated

10. Stability and Reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage, and transport.
Chemical Stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Heat, flames, and sparks. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological Information

Information on likely routes of exposure

Inhalation	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.
Skin Contact	Causes skin irritation.
Eye Contact	Causes eye irritation.
Ingestion	Droplets of the product aspirated into the lungs through ingestions or vomiting may cause a serious chemical pneumonia.

Symptoms related to the physical, chemical, and toxicological characteristics

Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways.

Components	Species	Test Results
Calcium bis (dinonylnaphthalenesulphonate) (CAS 57855-77-3)		
Acute		
Dermal		
LD50	Rabbit	>20 g/kg
Oral		
LD50	Rat	>5000 mg/kg
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)		
Acute		
Dermal		
LD50	Rabbit	>2000 mg/kg

Oral LD50	Rat	>5000 mg/kg
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)		
Acute Dermal LD50	Rabbit	>2000 mg/kg
n-hexane (CAS 110-54-3)		
Acute Dermal LD50	Rabbit	>1300 mg/kg
Oral LD50	Rat	15840 mg/kg
zinc oxide (CAS 1314-13-2)		
Acute Oral LD50	Rat	>5000 mg/kg

*Estimates for product may be based on additional component data not shown.

Skin Corrosion/Irritation	Causes skin irritation
Serious eye damage/irritation	Causes eye irritation
Respiratory Sensitization	Not a respiratory sensitizer
Skin Sensitization	This product is not expected to cause skin sensitization
Germ Cell Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated

US National Toxicology Program (NTP) Report on Carcinogens

Not listed

Reproductive Toxicity	Suspected of damaging fertility
Specific target organ toxicity- single exposure	May cause drowsiness and dizziness
Specific target organ toxicity- repeated exposure	Not classified

Aspiration hazard May be fatal if swallowed and enters airways. If aspirated into lungs during swallowing or vomiting, may cause chemical pneumonia, pulmonary injury or death.

Chronic Effects Prolonged inhalation may be harmful

12. Ecological Information

Ecotoxicity Toxic to aquatic life with long lasting effects.

Components	Species	Test Results
2-methylpentane (CAS 107-83-5)		
Aquatic <i>Acute</i>		
Crustacea	EC50	Daphnia 1-10 mg/L, 48 hours
Fish	LC50	Fish 1-10 mg/L, 96 hours
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)		
Aquatic		
Crustacea	EC50	Water Flea (Daphnia magna) 1000 mg/L, 48 hours

Fish	LC50	Rainbow trout, Donaldson trout (Oncorhynchus mykiss)	5000 mg/L, 96 hours
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)			
Aquatic <i>Acute</i>			
Crustacea	EC50	Daphnia	1-10 mg/L, 48 hours
Fish	LC50	Fish	1-10 mg/L, 96 hours
n-hexane (CAS 110-54-3)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	2.101-2.981 mg/L, 96 hours
zinc oxide (CAS 1314-13-2)			
Aquatic <i>Acute</i>			
Crustacea	EC50	Water Flea (Daphnia magna)	0.098 mg/L, 48 hours
Fish	LC50	Rainbow trout, Donaldson trout (Oncorhynchus mykiss)	1.1 mg/L, 96 hours

*Estimates for product may be based on additional component data not shown.

Persistence and Degradability

Bioaccumulative Potential

Partition coefficient n-octanol / water (log Kow)

2,2-dimethylbutane	3.82
2,3-dimethylbutane	3.42
2-methylpentane	3.74
3-methylpentane	3.6
n-hexane	3.9

Bioconcentration factor (BCF)

naphtha (petroleum), hydrotreated light	10-25000
zinc oxide	60690

Mobility in Soil No data available

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal Considerations

Disposal of waste from residues / unused products	If discarded, this product is considered a RCRA ignitable waste, D001. Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate, or crush. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways, or ditches with chemical or used container. Dispose in accordance with all applicable regulations.
Hazardous waste code	D001: Waste flammable material with a flash point <140°F
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

DOT

UN Number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity

Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling
Special provisions	N82
Packaging exceptions	306
Packaging non bulk	None
Packaging bulk	None
IATA	
UN Number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not applicable
ERG Code	10L
Special precautions for user	Read safety instructions, SDS, and emergency procedures before handling
Other information	
Passenger and cargo aircraft	Allowed with restrictions
Cargo aircraft only	Allowed with restrictions
IMDG	
UN Number	UN1950
UN proper shipping name	Aerosols, Limited Quantity
Transport hazard class(es)	
Class	2
Subsidiary risk	-
Packing group	Not applicable
Environmental hazards	
Marine pollutant	No
EmS	Not available
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling

15. Regulatory Information

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

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

Not regulated

SARA 304 Emergency Release Notification

Not regulated

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated

US EPCRA (SARA Title III) Section 313 – Toxic Chemical: Listed substance

n-hexane (CAS 110-54-3)

zinc oxide (CAS 1314-13-2)

CERCLA Hazardous Substance List (40 CFR 302-4)

n-hexane (CAS 110-54-3) Listed

zinc oxide (CAS 1314-13-2) Listed

CERCLA Hazardous Substances: Reportable quantity

n-hexane (CAS 110-54-3) 5000 Lbs

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee

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

n-hexane (CAS 110-54-3)

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

Not regulated

Safe Drinking Water Act (SDWA)

Not regulated

Food and Drug Administration (FDA)

Not regulated

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 Hazard categories	Immediate Hazard – Yes
	Delayed Hazard – Yes
	Fire Hazard – Yes
	Pressure Hazard – Yes
	Reactivity Hazard – No
SARA 302 Extremely Hazardous Substance	No

US State Regulations

US California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

- distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)
- liquefied petroleum gas (CAS 68476-68-8)
- naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
- n-hexane (CAS 110-54-3)

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

- 2,2-dimethylbutane (CAS 75-83-2)
- 2,3-dimethylbutane (CAS 79-29-8)
- 2-methylpentane (CAS 107-83-5)
- naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
- n-hexane (CAS 110-54-3)
- zinc oxide (CAS 1314-13-2)

US Massachusetts RTK – Substance List

- 2,2-dimethylbutane (CAS 75-83-2)
- 2,3-dimethylbutane (CAS 79-29-8)
- 2-methylpentane (CAS 107-83-5)
- naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
- n-hexane (CAS 110-54-3)
- zinc oxide (CAS 1314-13-2)

US Pennsylvania worker and Community Right-to-Know Law

- 2,2-dimethylbutane (CAS 75-83-2)
- 2,3-dimethylbutane (CAS 79-29-8)
- 2-methylpentane (CAS 107-83-5)
- naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
- n-hexane (CAS 110-54-3)
- zinc oxide (CAS 1314-13-2)

US Rhode Island RTK

- distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)
- naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
- n-hexane (CAS 110-54-3)

US California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

US California Proposition 65 – CRT: Listed date/Carcinogenic Substance

titanium dioxide (CAS 13463-67-7)	Listed: September 2, 2011
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Volatile Organic Compounds (VOC) Regulations

EPA

VOC Content (40 CFR 54.100(s))	100%
Consumer Products (40 CFR 59, Subpt. C)	Not regulated

State

Consumer Products	Not regulated (semi-solid lubricant)
VOC Content (CA)	84.7%
VOC Content (OTC)	84.7%

International Inventories

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

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

16. Other Information, Including date of preparation or last revision

Issue Date 01-16-2015
Revision Date 10-09-2017
Prepared By Allison Yoon
Version # 03
Further Information CRC# 568F-G/1002591-1002592
HMIS® Ratings Health: 2*
 Flammability: 4
 Physical Hazard: 0
 Personal Protection: B

NFPA Ratings Health: 2
 Flammability: 4
 Instability: 0

NFPA Ratings**Disclaimer**

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Revision Information

Product and Company Identification: Product Codes
 Transport Information: Material Transportation Information
 Other Information, including date of preparation or last revision: Further information