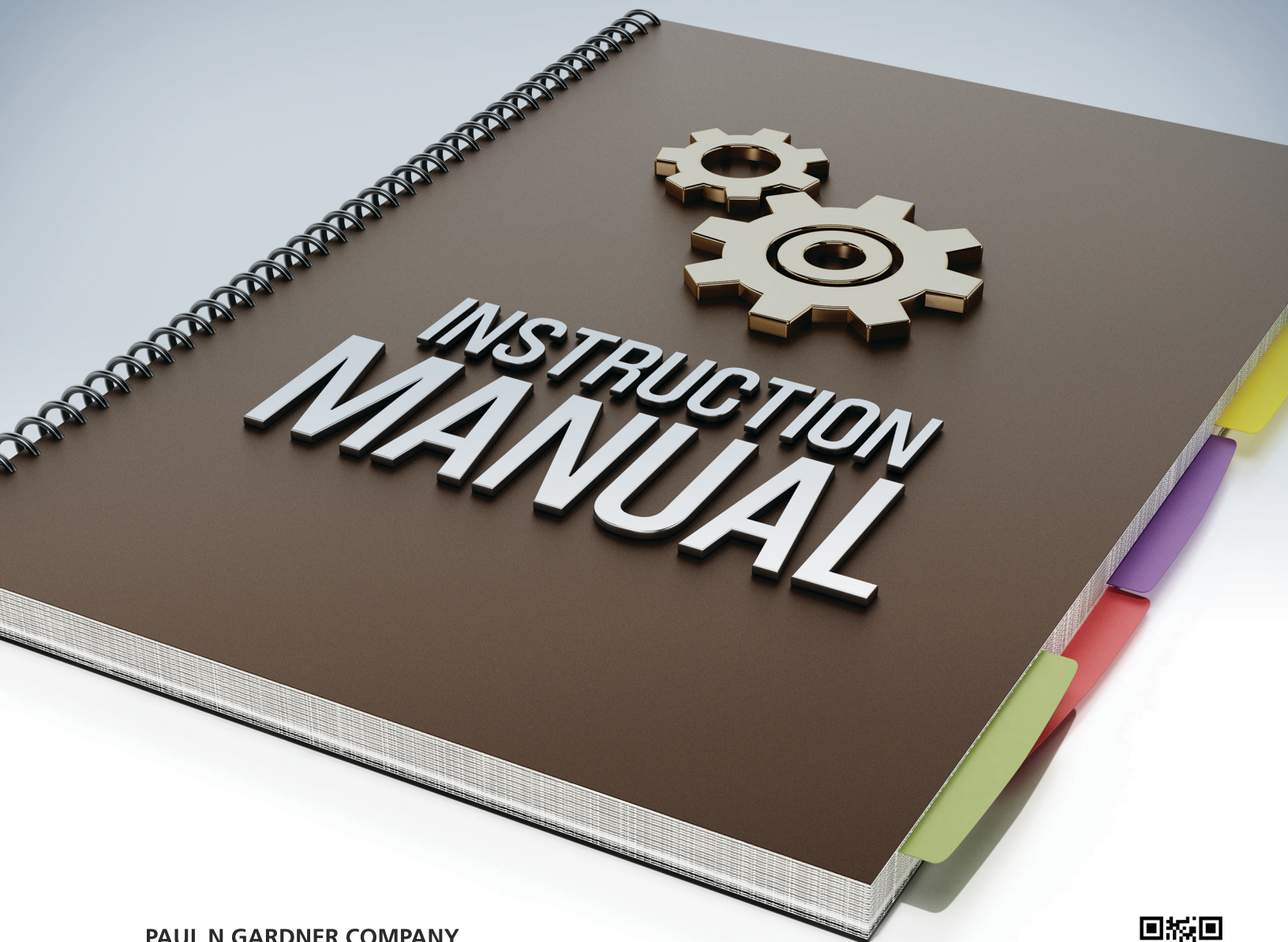




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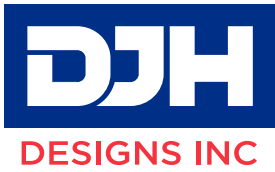
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INSTRUCTIONS

GARDCO DISTRIBUTED PRODUCTS





MEK RUB TEST MACHINE

USER MANUAL



Everything you need to know about setting up & using your MEK Rub Test Machine by DJH Designs Inc.

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Warranty

The information contained in this document is subject to change without notice.

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MANUAL CONVENTIONS

To help you find important information quickly, and make instructions easier to understand, this manual uses the following conventions:

Italic refers to a document title or is used for emphasis.

Bold refers to new terms or is used for emphasis.

NOTE

Notes contain important information set off from the text.

CAUTION

Caution messages appear before procedures which, if not observed, could result in inaccurate data or in damage to the equipment.

WARNING

Warning messages alert you to a specific procedure or practice which, if not followed correctly, could cause serious personal injury.

TIP

Contains helpful information about a procedure or practice

UNPACKING MACHINE



1. When first opening the box, first remove the safety cover, then remove other components underneath.



2. Remove box underneath safety cover containing the MEK reservoir.



3. Remove foam insert

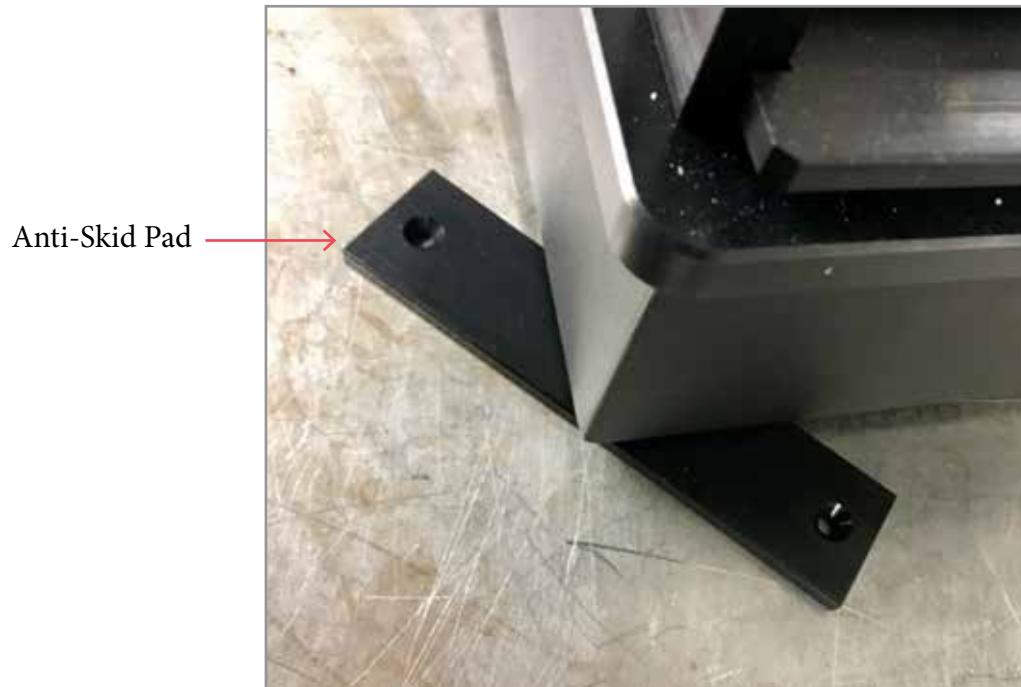


4. With the help of another person, carefully lift the MEK machine base from the box.

MACHINE INSTALLATION

Select a suitable area for the machine. The machine weight is 62.5 lbs. (30 kg) and must be installed on a sturdy work bench that will be able to absorb the inertia of the dead weight rubbing block being shuttled back and forth. It is recommended that the work area have at least 30cm clearance on all sides.

The machine comes with two (2) mounting plates to secure the machine to the tabletop. Please refer to the diagram below for recommended method of installation. Place the anti-skate pads under the corners of the machine as shown. For metal bench tops mark the screw locations drill pilot holes and then screw the brackets onto the worktable surface. For wood benches and surfaces simply attach using #10 wood screws.

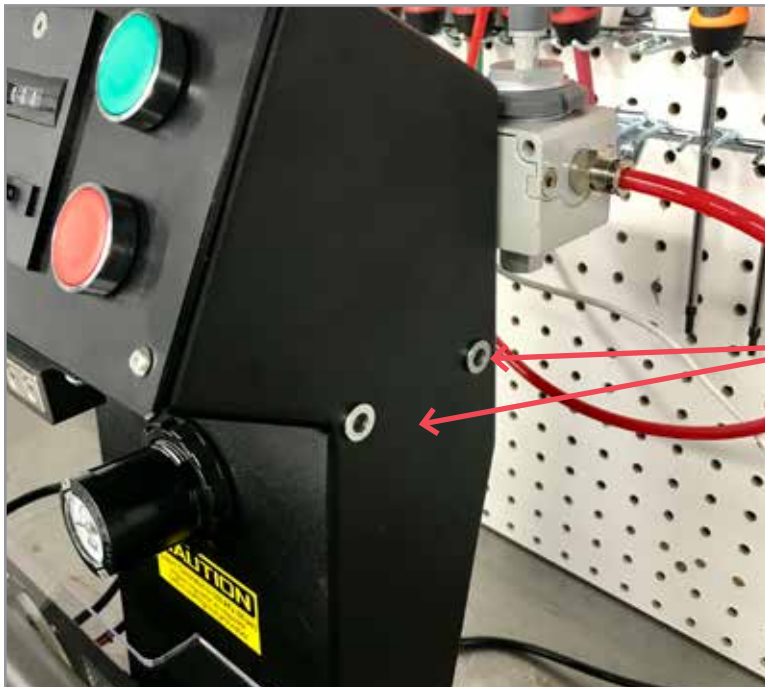


WARNING

Failure to secure the machine to the work table may result in the machine falling off the table, serious damage to the machine and or personal injury can occur due to the weight of the machine.

UNPACKING & INSTALLATION

Installing MEK Reservoir



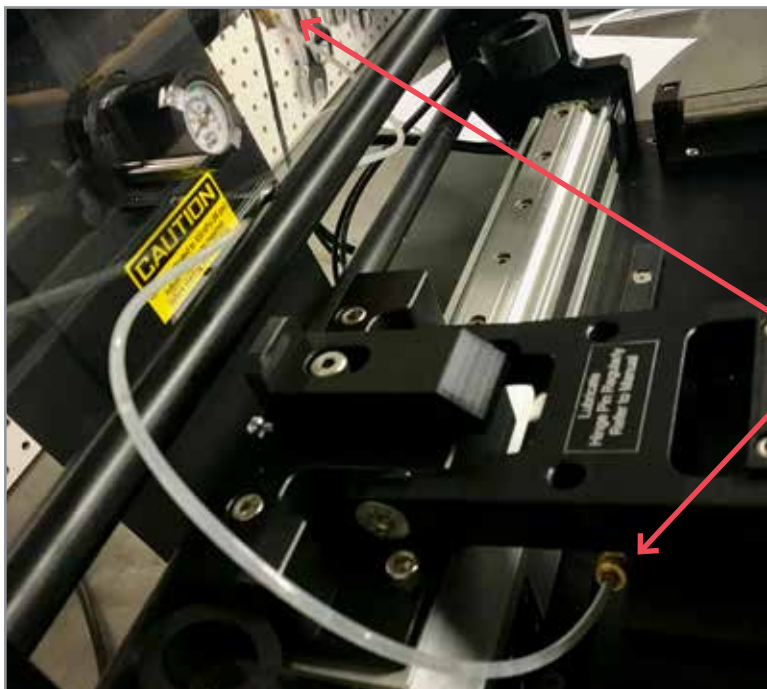
1. Locate the two (2) rivnuts for the reservoir



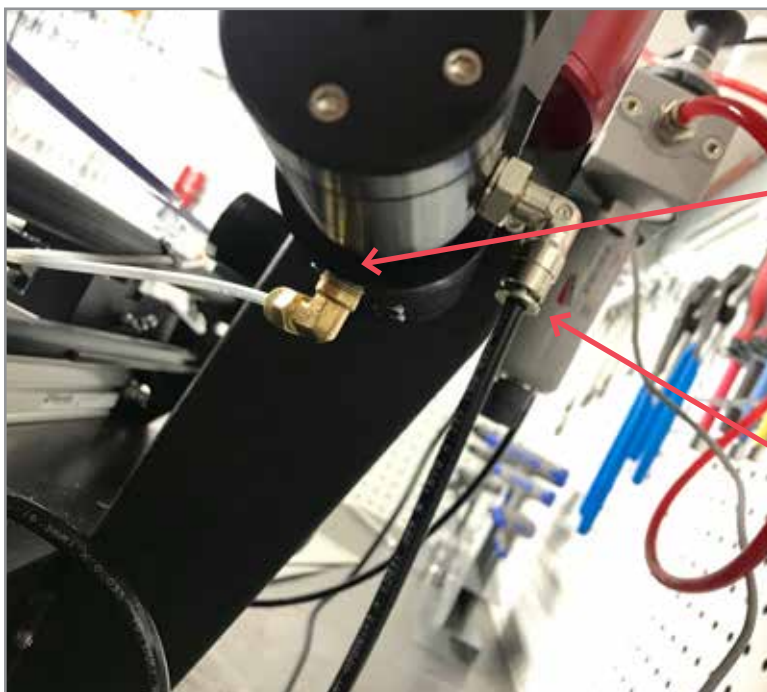
2. Mount the two (2) screws for the reservoir assembly as shown using the 1/8" allen key. Do not over tighten the screws as it is possible to strip the rivnuts if too much force is applied.

UNPACKING & INSTALLATION

Installing MEK Reservoir



3. Connect the flow line coming from the rubbing block to the flow valve located on the bottom of the reservoir as shown



4. Tighten the fitting by hand then use a 10mm wrench tighten an additional $\frac{1}{4}$ turn. Excessive tightening may collapse the ferrell and restrict the solvent flow.

5. Connect the air supply line from the machine base to the back of the reservoir assembly.

UNPACKING & INSTALLATION

Installing the Safety Cover

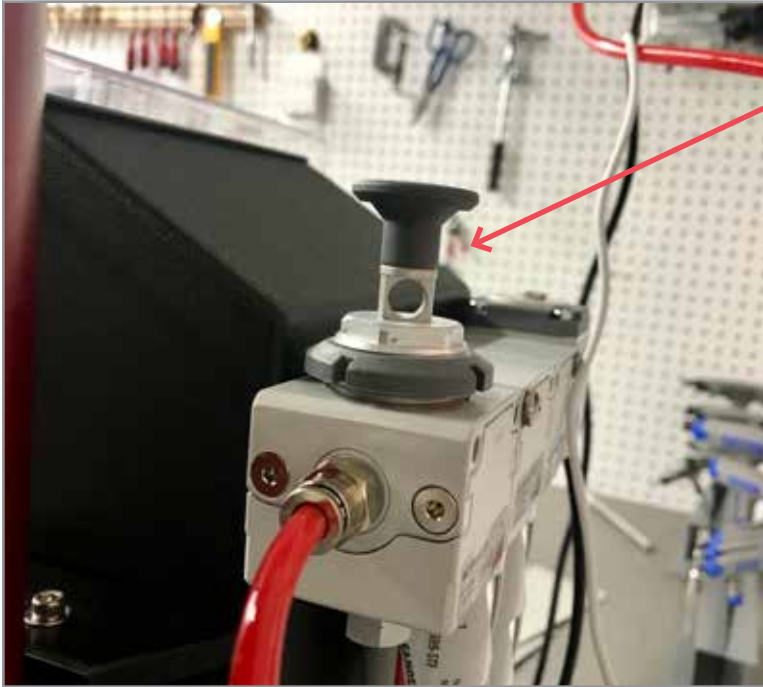
Align Front of cover to the front edge of the base plate and then align the holes in the cover to the holes in the mounting blocks. You may have to rotate the mounting blocks to be in the correct orientation prior to sitting the cover on the machine. Install the two mounting screws with the large diameter flat washers supplied. All machines are equipped with a cover interlock and the safety cover must be installed to operate the machine.



UNPACKING & INSTALLATION

Air Supply Connection

The MEK Rub Test machine is supplied with a 2 stage air filter assembly pre-installed on the back of the unit, bypassing or removal of these filters will void the machine warranty, if problems due to filters plugging up occur the air supply problem should be addressed before continuing use of the machine.



CAUTION

Air Supply shutoff, before connecting the air supply to the machine make sure that the machine airshut off valve is in the closed position. *(Pull up on the handle to shutoff air supply)*

Connect the air supply to the inlet side of the filter assembly

CAUTION

Clean, dry, oil free air only, any use of oiler's or dirty air supply will void your warranty. Use of synthetic oils in the air supply can cause severe damage to the internal valve seals and must be avoided

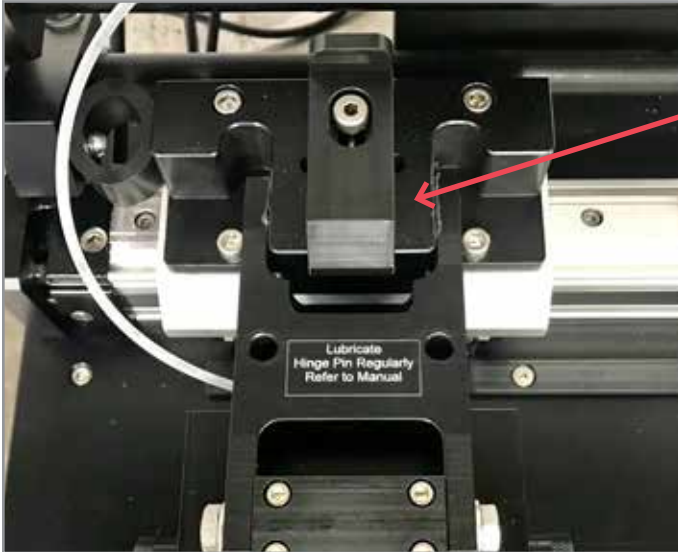
Once the air supply has been connected push the handle on the top of the filter assembly down to supply air the machine pneumatics, check the pressure gauge (located in regulator) on the tower face on the front of the machine. The correct operating pressure is **80 psi (550 Kpa)**. If the pressure is not correct adjust the regulator to the correct pressure.

NOTE

Correct operating pressure is important to achieving accurate test results, incorrect pressure will effect the number of strokes/min. Set pressure to **80 psi (550 Kpa)** setting is done statically do not try to adjust the pressure while the machine is running.

UNPACKING & INSTALLATION

Replacing the Rubbing Pad



The MEK rub test machine is equipped with a safety latch device, this latch will prevent the head from inadvertently falling back down onto the base plate if the machine happens to be bumped or if the head was not raised up fully to the over centre position of the head. Raising the head requires no operator interaction with the latch; the unit is spring loaded and will slide back as the head is raised against it. Once the head is raised past the latch point the latching device will snap back into place the head is now in the up and locked position. To lower the head, raise the head up fully if it is resting on the latch and with your free hand depress the latch and lower the head.



1. Rotate the holding plate 90° and lift off. The plate is magnetically held to the rubbing block.

2. Remove the old pad and discard



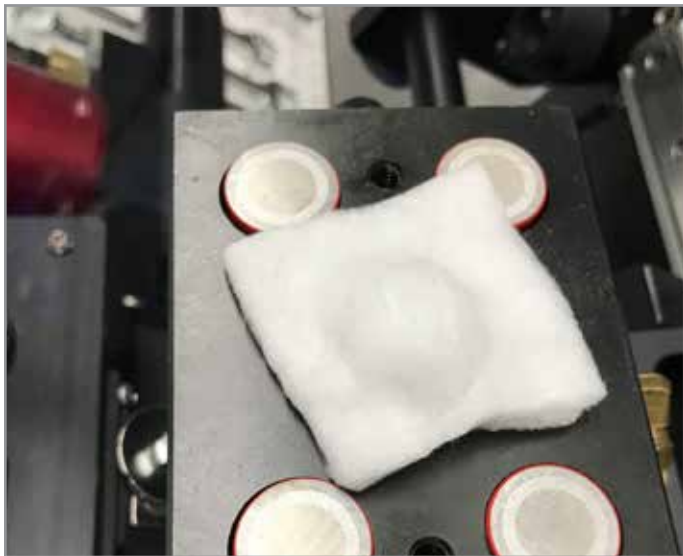
3. Cut the cotton pad into quarters and place the clean pad (approximate size $1\frac{1}{2} \times 1\frac{3}{4}$), double ply, diagonally over the plastic button, corners of the pad between the magnets.

4. Re-attach the plate at 90° and rotate back into original position

5. Wet the new pad with the MEK

UNPACKING & INSTALLATION

Replacing the Rubbing Pad



4. Re-attach the plate at 90° and rotate back into original position



5. Wet the new pad with the MEK

UNPACKING & INSTALLATION

Filling the MEK Reservoir



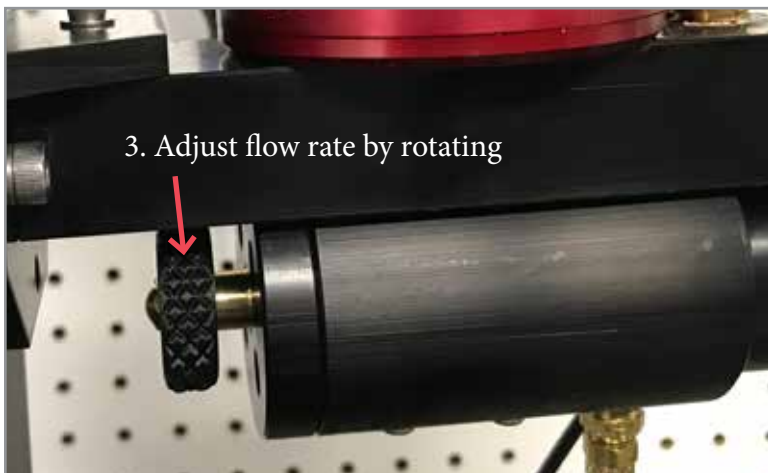
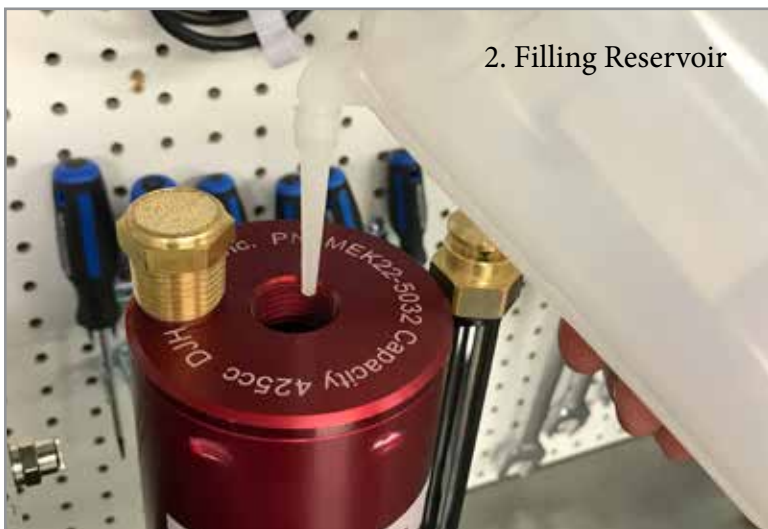
1. To fill the MEK reservoir, first remove the filler cap.

2. Use the Squeeze bottle provided to fill the reservoir, approximately 425cc. The reservoir has a site level so that you can see the level of MEK in the reservoir at all times.

CAUTION

Do NOT try and pour MEK or any other solvent from an open container, use only the squeeze bottle provided or an equivalent type of container.

3. Adjusting the flow rate; the flow rate of the valve has been preset at the factory, however you may find it necessary to adjust the flow rate to suit a particular test or a different pad material type. The rate is adjusted by opening or closing the control valve located on the bottom of the main valve body. You only require enough MEK flowing to keep the sample wet if the MEK begins pooling rapidly then cut down on the flow rate. If you are unable to adjust the flow rate, the flow control valve metering orifice may be blocked with contaminants.

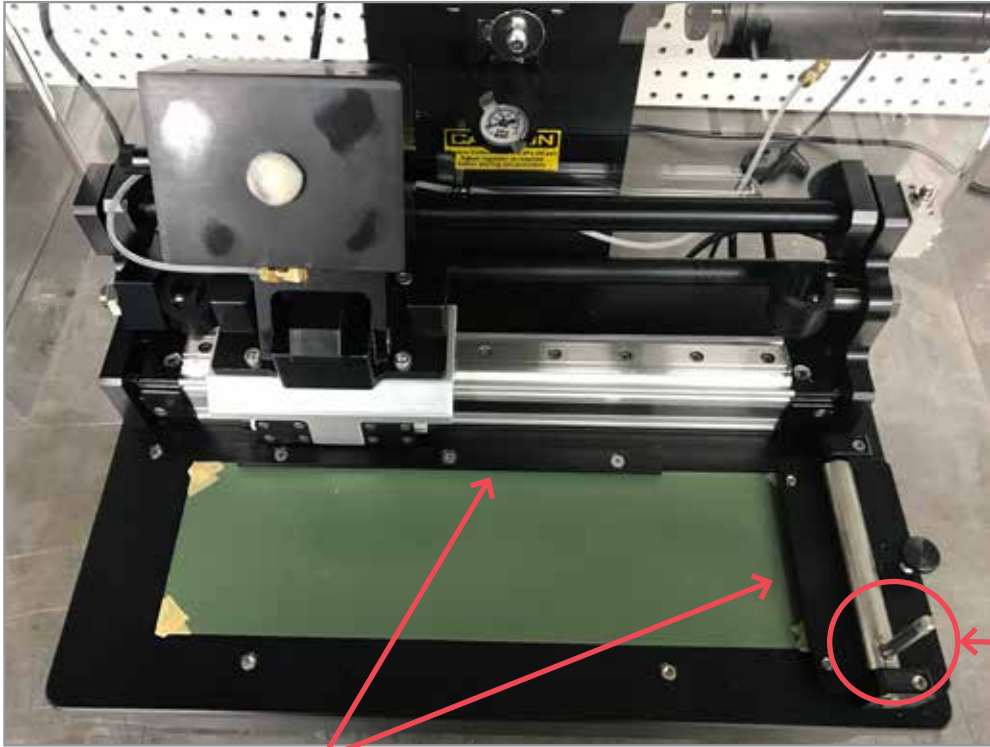


NOTE

It is recommended that you filter the solvent prior to filling the reservoir to prevent dirt and other contaminations from blocking the small orifice in the metering valve.

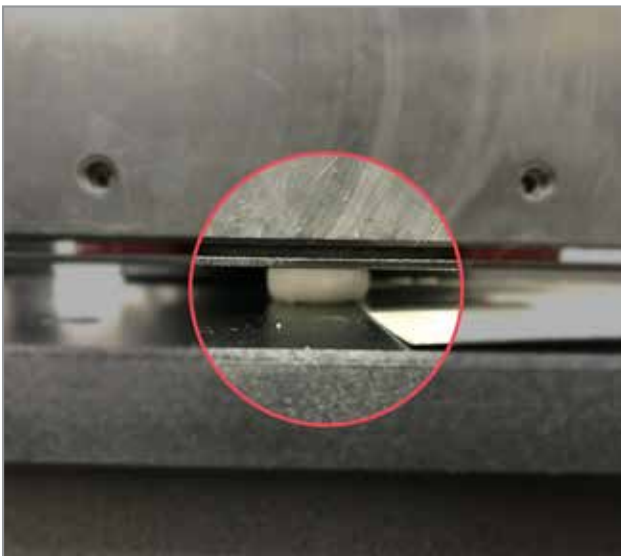
TESTING A PANEL

Minimum size 13cm (5") x 30cm (12") (*unless equipped with variable stroke kit*).



Place the panel on the test area, butt the right edge up against the locating pins under the panel holding clamp, and slide the top edge against and under the stop bar. The stop bar is machined with a taper so if the panel has a bow it will help to hold it flat.

Turn the clamp lever Clock Wise to secure the panel. If the clamp rotates too far clock-wise (i.e. 3 O' Clock position, return it to the vertical position and turn the knurled knob a quarter turn and try again. **Do not use excessive force to clamp the panel**), Turn the lever Clock-wise just tight enough to secure the panel.



CAUTION

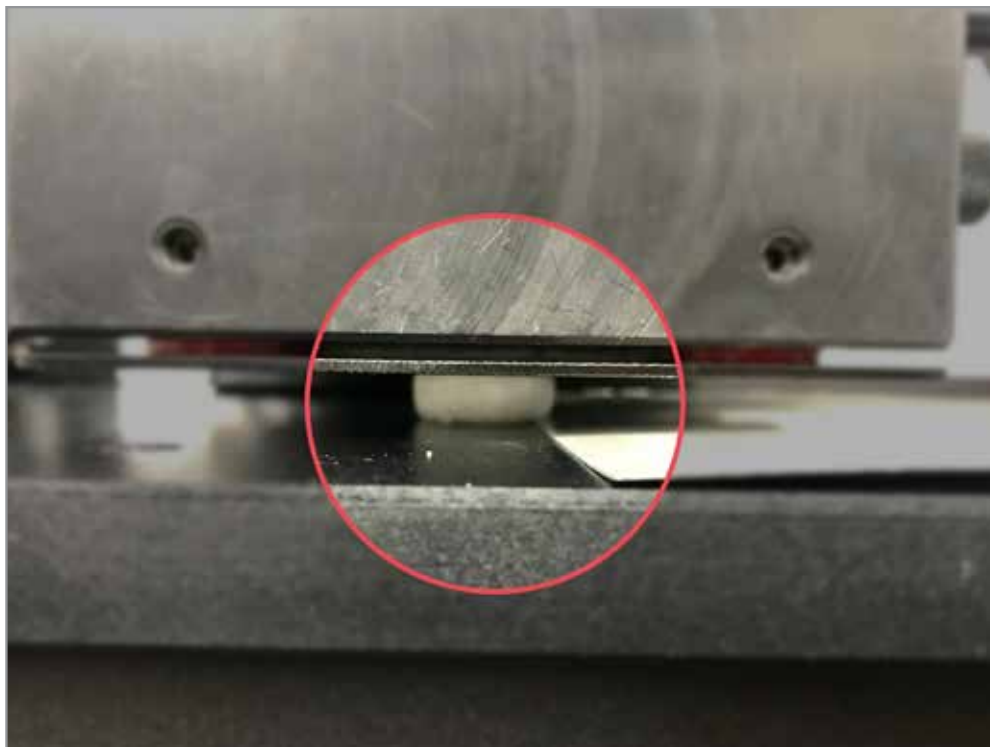
Do not use a panel shorter than 30cm (12"), if the panel is too short and the nozzle is allowed to ride over the edge of the panel as shown, it will damage the solvent nozzle.

An **optional** Variable Stroke Kit is available for testing short panels.

OPTIONAL VARIABLE STROKE KIT

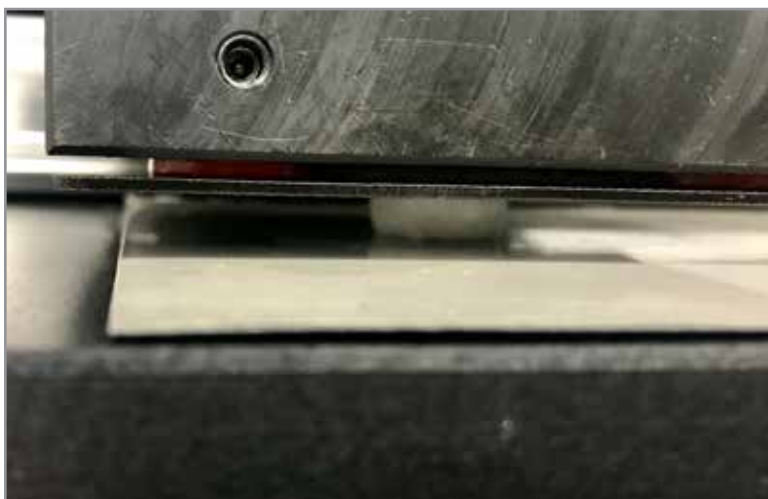
The Variable Stroke Kit is an add kit that allows for the use of non standard size panels ranging in length from 9cm (3.5") to 30cm (12").

Adjusting the stroke length; when testing non standard length panels it will be necessary to adjust the stroke length so that the nozzle cannot ride over the edge of the panel as shown below and cause damage to the nozzle.



1. Turn off the air supply to the machine by pulling up on the shutoff valve located on the top of the filter assembly.

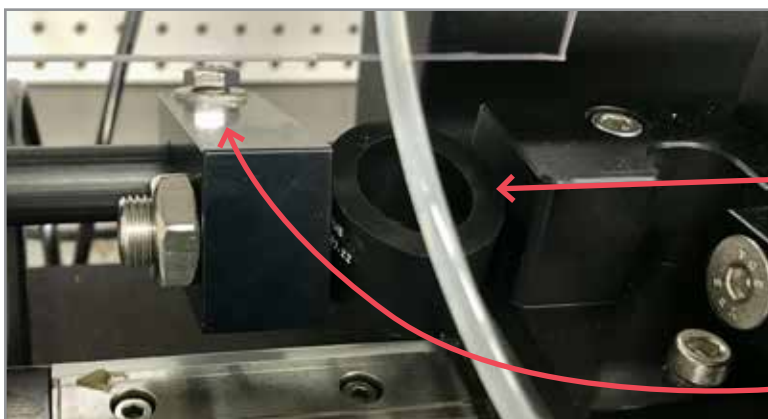
OPTIONAL VARIABLE STROKE KIT



2. Move the rubbing head by hand until the nozzle is positioned completely on the test panel close to the left edge as shown.



3. Locate the bolt on the stop block at the back left and loosen with a $\frac{7}{16}$ " wrench.



4. Move the bumper until it comes in contact with the head.

5. When running the machine, the absorption of the bumper is approximately 1cm (0.39"), so take that into consideration when setting up your variable sample.

6. Fasten the bolt on the stop block to tighten into place.

ADJUSTING THE RUBBING BLOCK



Adjustment to the rubbing block is normally only required if you want to change to running much thicker test panels. However, periodical adjustments to the rubbing block alignment may be required if the head has been dropped onto the sample to hard, or has been shifted for any reason.

To adjust the rubbing block, remove the MEK Pad (see page 10) and lower the head down onto the sample you want to test. Looking from the side of the block you can see that the button does not sit squarely on the sample. Loosen the 2 bolts that hold the block to the “H” arm, rotate the block forward and back to sit it squarely on the sample. Retighten the bolts, replace the pad and you are ready to begin your test.

RUNNING THE MACHINE

Setting the Number of Strokes

Preset the number of strokes (forward and back, a “double rub” counts as one stroke) press the button to the left of the digital counter display and hold it down. Press the buttons under each digit (ones, tens, hundreds, thousands) to select the number of strokes on the display. The counter will count down as the machine runs its test. To reset the counter to your original preset number of strokes simply press the button to left of the display again, only this time just press and release the button, the counter will return to the preset number of strokes.

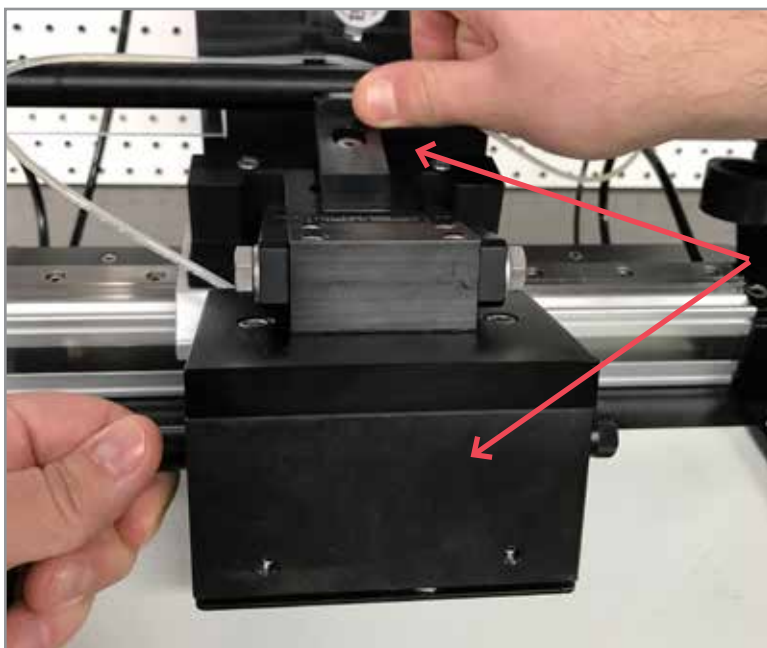


RUNNING THE MACHINE

Running the Rub Test

Please make sure that you do the following before running MEK Rub Testing machine:

- Filling the MEK Reservoir (page 11)
- Testing a panel (page 12)



1. Lower the block onto the panel (push unlock lever to lower the block)

2. Set number of double rubs (see previous page)



3. Press the start (Green) button. On completion of the preset number of strokes the machine will stop automatically.

NOTE

You can stop and start at any point during the count down with no interruption to the cycle total (i.e. the stop button is depressed during a cycle the counter stops at 25 strokes remaining, pressing the start button will begin the count down from that point, 25 remaining strokes).

NOTE

Different pad materials will affect your test results, if you are trying to correlate your results with another unit it is important to make sure that you are both using the same pad material. The cotton pads provided with the machine are ASTM compliant and can be purchased through DJH (PN: 1963)

TIP

To establish the required number of strokes that is acceptable to your standards, run a known panel by your hand method, and run a parallel test on the same panel with the machine. Stop the machine when the results appear similar. This will be your new test requirement.

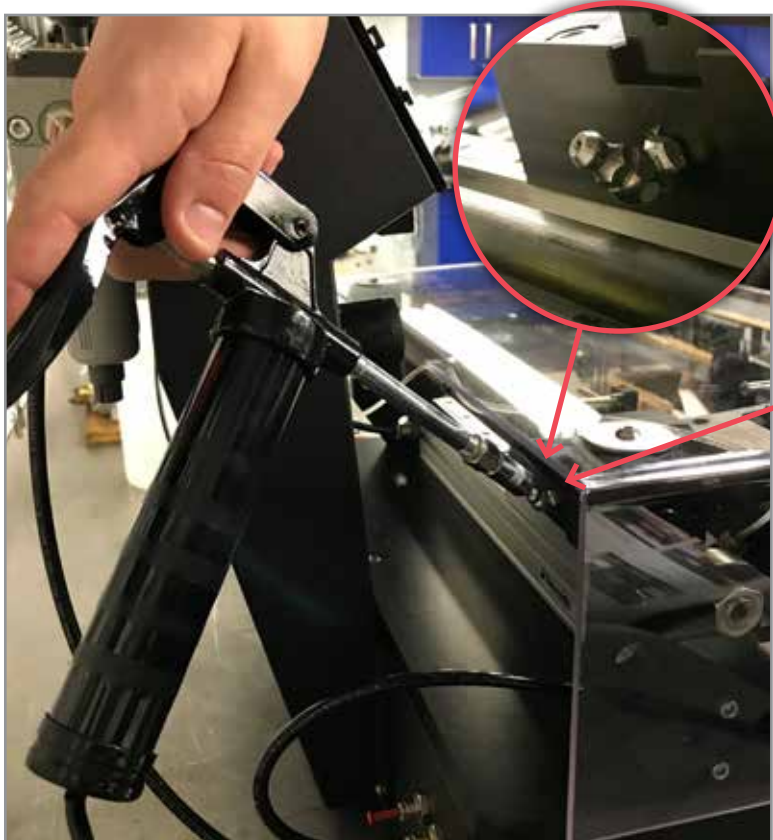
MAINTENANCE

Be sure to check the coalescing air filter and replace as required.

NOTE

If you notice a continued drop in air pressure to the machine, it is a good indication that the coalescing filter element requires replacement.

Check the secondary filter assembly and service as required.

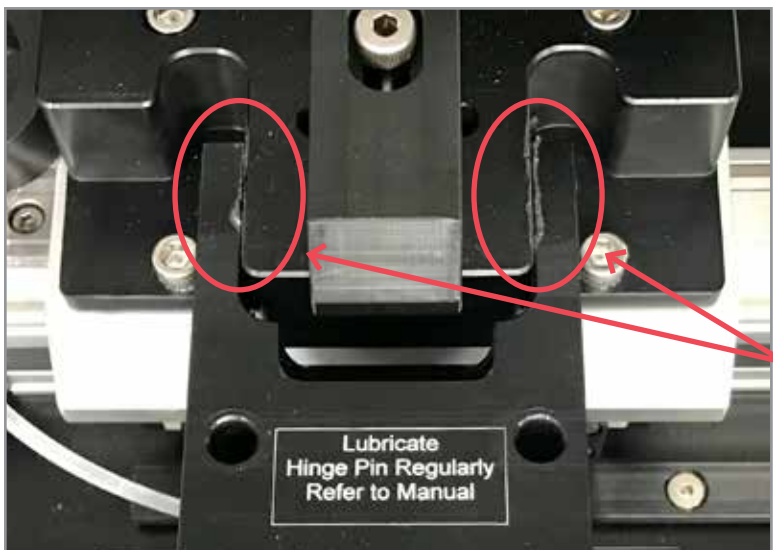


Lubricating the rubbing block hinge pin

Use the supplied grease gun and add grease until you see the overflow from both ends of the pin as shown in the image.

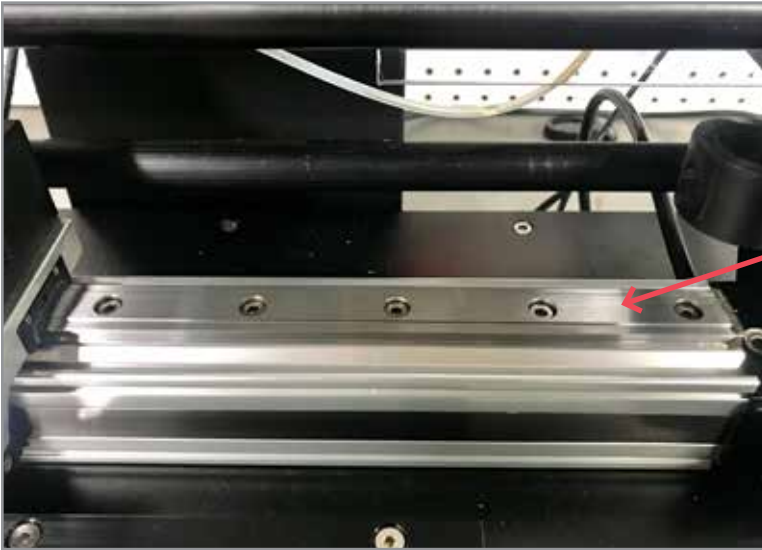
NOTE

Hinge pin and slide must be lubricated weekly.



Hinge pin; watch for over flow from both ends

MAINTENANCE



Be sure to lubricate the slide rail with 2 to 3 drops of instrument oil weekly

MACHINE SPECIFICATIONS

Weight of machine	28.3 kg (62.5 lbs)
MEK reservoir capacity	425 cc.
Mass of Rubbing Block	3kg (6.8 lbs) - Standard
Stroke Length	20.3cm (8")
Number of strokes/min (Double Rub)*	70
Operational air pressure	550 KPa (80 psi)
Max air supply pressure	965 KPa (140 psi)
Air consumption @ operational pressure	66.54 L/min @ 345 KPa (50 psi)
Minimum Flexible air line supply size	¼" I.D.
Air inlet connection at filter	¼" NPT
Cotton Pad size	1½ x 1¾, 2 ply
Counter max number of strokes	99999
Air supply	Clean and dry (non condensing)
Dimensions (Width Depth Height)	45.7cm x 48.3cm x 48.3mm (18" x 19" x 19")
Test panel size	12.7cm x 30.5cm (5" x 12")
Panel thickness max**	3.2 mm (1/8")
Electrical Requirements	None (all pneumatic system)
Compatible Solvents	MEK, Acetyl Acetone, Acetone, Acetylene, Isopropyl Alcohol, Methanol

* As per ASTM standard

** Thicker panels can be run, please contact DJH Designs for more information

CAUTION

Never use corrosive solutions. This machine is not designed to use anything other than what is stated above under "compatible solvents".

ONE YEAR LIMITED WARRANTY

DJH Designs warrants its products against defects in materials and workmanship for a period of one year from the date of purchase. DJH Designs will at its option, either repair or replace products which prove to be defective.

Exclusions

The warranty on your DJH Designs MEK Rub Test Machine will not apply to defects or damages resulting from;

- Improper or inadequate maintenance by the customer.
- Unauthorized modification or misuse.
- Operation outside of the environmental specifications of the equipment.
- Improper site preparation or maintenance.
- Contaminated air supply (moisture, oil, debris)

The warranty period begins either on the date of delivery, or when the purchase price includes installation by DJH Designs, on the date of installation.

Warranty Limitations

The warranty set forth above is exclusive and no other warranty, whether written or oral, is expressed or implied. DJH Designs specifically disclaims the implied warranties of merchantability and fitness for a purpose.

Some states or provinces do not allow limitation on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. However, any implied warranty of merchantability or fitness is limited to the one year duration of this written warranty.

Obtaining Service during the Warranty Period

Should your hardware fail during the warranty period, send your product to DJH Designs or you may also request service from the component manufacturer or one of their authorized agents. To locate a service center or to receive information about obtaining service, please see the service and support phone list on the next page

Obtaining Service after the Warranty Period

If your hardware fails after the warranty period, contact DJH Designs to obtain service.

When sending equipment to DJH Designs, follow the repacking guidelines listed below. Also, complete and enclose a copy of the service information form at the end of this chapter. Insuring the equipment for shipment is highly recommended.

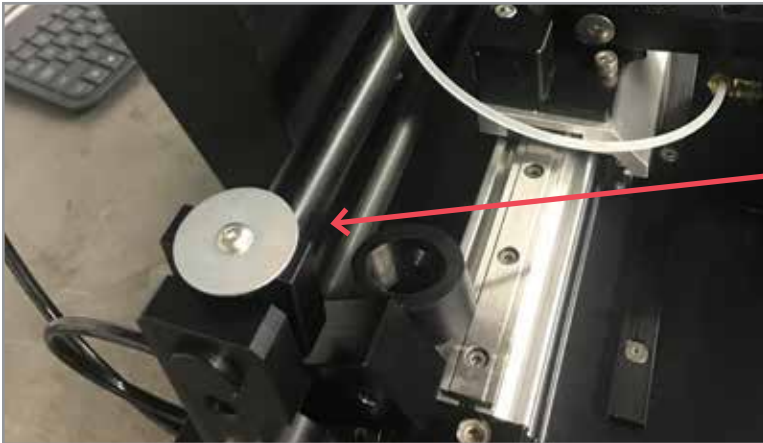
CAUTION

Shipping damages as a result of inadequate packaging is the customer's responsibility. Use the original packing materials whenever possible.

REPACKAGING GUIDELINES

Use the original packing materials whenever possible. If you have already disposed of your packing material, please take care in making sure that the equipment is well packaged and protected. You can also request the proper shipping container from DJH Designs. (Container cost and shipping charges will apply)

Instructions for packing MEK Rub Test Machine in ISPM15 compliant crate.



1. Safety shield must not be installed when repackaging. Remove safety shield and place washer/screws back into the inserts safely as shown.

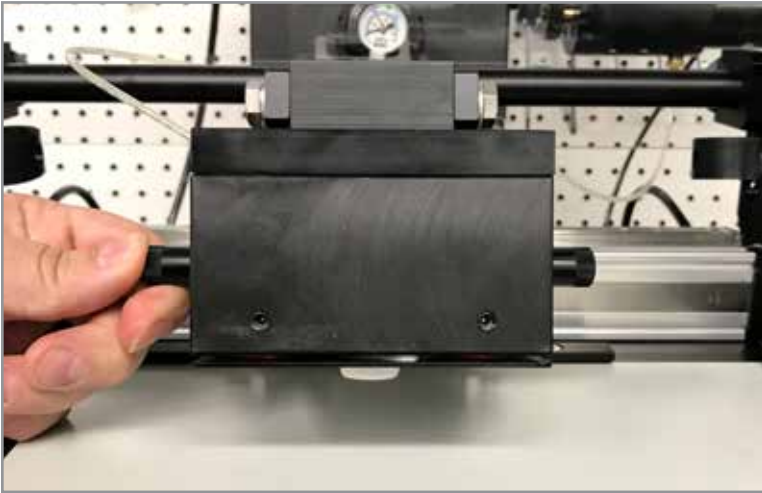


2. Disconnect reservoir & air supply lines prior to packaging.



3. Disconnect & uninstall MEK reservoir by removing the two screws. Once removed, reinstall screws to secure them and tighten them slightly.

REPACKAGING GUIDELINES



4. Ensure that the rubbing block is in the down position.



5. Wrap safety shield in a protective padding as shown.



6. Wrap MEK reservoir in protective padding as shown and place into the provided box.

Failure to properly secure the machine to the base and to the crate structure may result in damage to the machine.

REPACKAGING GUIDELINES



4. Place MEK machine base into foam insert as shown. Failure to properly secure the machine to the base and to the crate structure may result in damage to the machine.



5. Place top layer of foam on top of machine. This will only fit one way.



6. Place box containing packaged MEK reservoir as shown.

REPACKAGING GUIDELINES



7. Place the protected safety cover overtop of the box containing the MEK reservoir so that it sits flush on top.