

OPERATING MANUAL



MR. DEBURR QDB3



C&M TOPLINE
MASS FINISHING MACHINES
& TUMBLING MEDIA



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C&M Topline Warranty Policy

C&M Topline warrants our product to be free of material and workmanship defects. The period of warranty is 1 year from the date of purchase from an authorized seller*. No warranty is provided for products that have been modified, abused, handled carelessly, where repairs have been made or attempted by others, or for freight damage. No other warranty, written or verbal is authorized by C&M Topline. During the warranty period C&M Topline (or its authorized suppliers or agents) will replace or repair the product without charge if the product is found by C&M Topline to be defective.

To receive warranty services you must contact C&M Topline via info@cmtopline.com and receive authorization for warranty service. Unless otherwise authorized by C&M Topline, products must be returned to the factory to receive warranty service**.

*Submersible Fluid Pumps and Tumbling Barrels/Lids are warrantied for a period of 30 days from purchase. A defective or failed pump will be replaced during this period. A leaking or broken tumbling barrel will be replaced during this period

**Motors, speed controllers, and certain other accessories are warranted by their respective manufactures. To receive warranty service on these items you must contact a brand label service center that supports the product in need of service. C&M Topline will assist you in locating a service center.

For the first thirty days after purchase we will pay normal and necessary surface freight charges both ways. After thirty days the customer is responsible for all freight charges.

For prompt warranty service please provide the following information when contacting C&M Topline at info@cmtopline.com

Product Model: _____ Date Purchased: _____

Purchased From: _____ Address: _____ City: _____ State/Prov: _____ Postal Code: _____

Your company name: _____

Address: _____ City: _____ State/Prov: _____ Postal code _____

Phone: _____ Fax: _____ Email: _____

Your name: _____ Title: _____



Mr. Deburr QDB3 Operating Manual

Congratulations on your purchase of a Mr Deburr finishing tank system. The Mr. Deburr line is one of the most trusted names in the industry. C&M Topline has been manufacturing the Mr. Deburr line since 1972 and the machines are in constant use for thousands of satisfied customers across the globe. The Mr. Deburr line of vibratory tumblers use commonly available media to de-burr, polish, de-scale, or otherwise surface condition parts made from various materials. The media and parts achieve the proper processing motion from the electric motor and bearing assembly that includes a set of offset weights. The rotation of the offset weights creates vibratory forces that rotate the part and media within the tank creating the necessary tumbling action.

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Receipt and initial machine set-up

1. Ensure that you have received all the items that you ordered. Compare the packing slip with your purchase order, and of course with the physical items received.
2. Verify that there is no obvious shipping damage. If shipping damage is discovered notify the freight carrier of your intention to file a freight damage claim. They will assist you.
3. Verify that the AC power that is identified on the machine as received matches the AC power that you intend to operate the machine with. Do not modify the machine's wiring without first contacting your distributor or C&M Topline.
4. Do not modify or defeat any electrical wiring safety feature. For example, do not remove the grounding pin on the AC electrical plug.
5. Verify that you have received the manual
6. Prior to operating the machine read the manual carefully. Ensure that all people who will operate the machine or who will work in the vicinity of the machine read, understand, and comply with these safety instructions.
7. Ensure that your AC electrical power source is properly sized and properly fused for the machine you purchased. Consult with a competent electrician to determine the proper specifications for your electrical service prior to connecting your machine.

Setting Up Your Mr. Deburr QDB3 Machine

CAUTION: This equipment is heavy. Observe good and safe practice when attempting to install, move, maintain, or otherwise work on it. Failure to observe this caution may create a safety hazard.

Your new machine does not require anchoring. It can be moved around on the preinstalled heavy duty caster wheels as necessary.



To Start:

1. Locate your machine in the desired location with adequate access to power
2. For 110V equipped machines, simply plug the machine into a GCFI grounded outlet with at least 15-amp service
3. For 208V equipped machines, install the desired power receptacle on the provided power cord to access the power in your facility
4. Setup your fluid system with fresh fluids, and the pump rested on the provided bracket, plug the pump into the outlet provided in the liquid tight conduit box mounted to the side of the machine. For 208V equipped machines a separate outlet is needed
5. Load your media in the tank followed by your parts to tumble
6. Turn the switch on which is located withing the liquid tight conduit. This will start the machine motor and begin the tumbling cycle. The switch controls both the motor and the outlet for the electric fluid pump (note, never run the pump dry)

Occupational Noise



Mr. Deburr systems produce levels of noise consistent with their intended purposes. The level and spectral content of noise produced is dependent on the tub size, the degree that the bowl is maintained in proper operating condition, the abrasive/media and accessories used, the specific application, use or not of the optional lid, and the surrounding environment. Noise levels produced by various Mr. Deburr vibratory systems, as measured at the C&M Topline factor, range from 69 to 93 decibels. Product operators and persons in

the immediate product vicinity should be protected from excessive noise levels as prescribed in OSHA regulation 29, part 1910.95 titled "Occupational Noise Exposure". Your new QDB3 machine is equipped with a rigid sound reduction lid that will significantly reduce operational noise. Always use ear protection when not using the included sound reduction lid.

Electrical Installation

Avoid Electrocutation Hazards. The Mr. Deburr system is not NEMA 4 or NEMA 4X rated. They must not be used in a manner that allows fluids to enter the unit base, power cord, on/off switch, or electrical plug. This machine must be installed with a GFCI outlet to minimize the risk of electric shock or electrocution. If your machine is configured for 208-240 volts you should install a GFCI circuit in your electrical distribution panel. If you are installing a three phase machine, please follow the guidelines below on page 5.

CAUTION: Only qualified Electricians should perform electrical installation, adjustments, maintenance, or modifications to this equipment. Failure to observe this caution may create a safety hazard.

CAUTION: Install this equipment in accordance with local electrical codes and regulations. Failure to do so may create a safety hazard. See the label on the machine to determine its electrical service and horsepower.

Equipment	Min. service size	Model
<u>Single Phase Units</u>		
3/4 hp, 120 VAC	12 ampere	QDB3/DB300
3/4 hp, 220 VAC	10 ampere	QDB3/DB300
Fluid Pump, 115 VAC	1.1 ampere	QDB3/DB300 & DB600

Single Phase QDB3/DB300 Motor

The machine motor and pump are 115 volts single phase. The motor is 3/4 H. P. and draws 12.0 Full Load Amps (F.L.A.). It has a manual overload located on the end of the motor. The motor may also be wired for 220 volts. The pump draws 1.1 amps. Both pump and motor have a 6-ft. cords with a 115-volt plug. A Double Gang Electrical Box should be located about 3 ft. from the floor and to the left of the machine. Install into the electrical box two 115-volt plugs rated for 20 amp and a 20-amp on/off switch. Instead of a switch you may use a timer. The machine and pump should be on a 20-amp breaker by themselves. **CAUTION: If on start-up, the machine's RPM cycles up and down, shut the machine off immediately. This problem is caused by a voltage drop in the line and will burn the motor out. The machine should never be run on an extension cord.**



Motor Rotation

Electric motors will operate CW or CCW depending on how the motor is wired (in the case of three phase motors how the incoming power is phased). The machine drive shaft must rotate CCW when viewed from the dump chute end of the machine. If the shaft rotates CW the media will not move properly, and vibratory processing time will be significantly increased. If the shaft operates CW reverse the motor rotation. For three phase machines simply reverse any two incoming feed lines. For single-phase motors see the motor label plate which will usually direct the reversal of two wires within the motor conduit box.

Media and Part Loading

If you purchased a media starter kit from C&M Topline, install the media and compounds into the chamber using the prescribed quantities and mixtures. Otherwise follow the instructions provided. Do not exceed the media load prescribed for your machine.

<i>Machine</i>	<i>Ceramic media load</i>	<i>Plastic Media Load</i>	<i>Part load</i>	<i>Max. total load</i>
QDB3/DB300	150 lbs.	100 lbs.	100 lbs.	250 lbs.

Overloading the machine may significantly reduce its service life. If you use steel media, note that steel media weighs generally 200 to 350 pounds per cubic foot (Non steel media generally weighs 20 to 125 pounds per cubic foot). To avoid possible machine damage do not add media and parts to the machine such that the total specified machine load is exceeded.

Using too little media in your Mr. Deburr machine will significantly reduce vibratory motion and adversely affect processing time and quality. You should have sufficient media in your Mr. Deburr such that the media rises to less than 5 inches (3-4 inches is ideal) of the tank's upper edge when the machine is operating. Add media as required to maintain this minimum quantity.

Place your parts into the tub. Note the above part loads. The part load prescribed is not a maximum but rather a nominal weight. The geometry, material, and weight of your parts will determine the part load you can achieve. The greater the total load, the harder the machine must work to sustain suitable energy delivery. Do not exceed the maximum total loads specified. To do so may shorten the life of your machine, and/or diminish its process capability.

Vigorous media and part movement is evidence of good finishing action. A rotating wave with the highest portion of the wave rising the back wall of the machine and the front portion of the wave substantially below the rear portion should exist. With good action the parts circulate and rise to the front of the tank, then cascade down the wave to the back of the tank. Should you not observe this quality of motion, check that the machine is loaded properly (see the previous table).

Fluid System and Nominal Operation

Your Mr. Deburr system was shipped from the factory with a re-circulating fluid system that includes a pump, pump bracket, connecting hose, and recovery sump bucket that serves to collect the fluid output from the tank drain. Screw the hose barb on the hose that is connected to the pump into the petcock at the top of the tank. The bucket goes under the tank drain and the pump hangs in the bucket with the bracket provided. Fill the 6-gallon bucket included



Figure 1 Fluid System

with QDB3 systems with 5.5 gallons of water. The compound should be mixed at a ratio of 1-4 ounces per gallon of water. Figure 1 shows the standard DB300 system. Note cutout in bucket is for display purposes.

During processing ensure that the switches to the Mr. Deburr motor and the fluid pump are both in the “on” position. Adjust the flow rate of the fluid with the petcock that is connected to the fluid pipe. The flow rate should be adjusted down so that the media is wet but with little to no accumulation of standing water in the bottom of the tank while the machine is running. The fluid should just drip into the machine while it is running. If you notice a large amount of foam in the bucket, reduce the water flow as well.

The fluid should be changed often, at least once every 8 hours of operation. If the fluid is very dirty the media will become sticky and stop turning in the tank. Dirty fluid also causes more foaming during operation and can become rancid.

It is also important that the pump remains submersed while running. If the pump is allowed to run dry, it will become very hot. This will shorten the life of the pump if not burn it out completely. Also ensure that the pump is suspended off the bottom of the bucket using the included bracket. This prevents the excess sediment that collects in the bucket from prematurely reducing pump life. To make changing the circulation solution easier, put a disposable plastic bag in the bucket before filling it with water and compound. The bag should be 3 mil or 4 mil thick. Simply pour off the liquid and dispose of the solid waste using the bag.

You may also set our machine up to run with a flow-through fluid system or a batch type (closed) system. Drain plugs are available that will allow the machine to operate as a closed system.

Wear proper clothing and personal protection equipment when operating your machine

Avoid Fire and Explosion Hazards

The use of fluids other than water and specified soaps in your Mr. Deburr system (or an associated fluid re-circulating system) may create a fire/explosion hazard that could result in personal injury, or death. Use only clean water with recommended compounds.

Avoid eye damage, flesh burns, and/or poisoning. Many vibratory processing soaps, compounds, and media are acidic or caustic. Wear appropriate flesh and eye protection gear when using vibratory soaps and compounds, and when working around and with your Mr. Deburr system. Do not ingest these materials. MSDS sheets are available for all soaps, compounds, and media sold by C&M topline at www.cmtopline.com. Obtain, read, and apply the precautions specified in the MSDS sheets.



Precautions with Fluids and Other Materials

Only use fluid as recommended by C&M Topline. The Mr. Deburr urethane liner is very tough and resistant to abrasion. Certain chemicals may, however, attack it. In example, mineral spirits may leach agents from the



urethane and reduce its service life. If in doubt consult with C&M Topline or a chemist who is knowledgeable about urethane. Remember, never use flammable chemicals in your Mr. Deburr system. Likewise, many chemicals can damage the pump and associated apparatus.

Additionally, there are many different chemicals in use as coolants, cutting fluids, and for other purposes commonly found in facilities such as machine shops. C&M Topline cannot guarantee the compatibility of the various soaps and fluids that we sell with the chemicals and fluids you may use. You as the consumer must be sure that the fluids and chemicals that you elect to use are compatible with each other and with other materials. It is possible that chemical reactions between fluids and/or materials that you use could be a threat to human health and safety; and/or create conditions that are deleterious to the Mr. Deburr system, peripheral equipment, and/or your parts.

There are many compounds that are available to use in vibratory machines depending on the materials, media, and results that you are using and desire. Fluids and compounds serve to improve finish, speed results, extend media life, and in some cases to retard oxide formation. The following is a partial list of guidelines:

Aluminum

When processing aluminum or other non-ferrous materials to a burr free state with matte finish select liquid soap such as VF77 and mix it with water at a concentration of 1 to 4 ounces per gallon of water. Adjust the fluid valve to deliver a steady trickle of fluid to the tank. To improve your parts surface condition post processing always rinse your parts in clean water shortly after removing them from the chamber, then dry them to minimize spotting. Remember that many metals will oxide rapidly when machining, etc. expose fresh metal (as is the case with vibratory processing). If this is a problem there are various chemicals that are available that you may use to dip your parts in post vibratory process to minimize oxide formation. Consult with your metals supplier, or C&M Topline.

Steel

When processing steel and other ferrous materials to a burr free state with a matte finish select a liquid soap that also contains a rust inhibitor such as VF100 and mix it with water at a concentration of 1 to 4 ounces per gallon of water. Adjust the fluid valve to deliver a steady trickle of fluid to the tank. To improve your parts surface condition post processing always rinse your parts in clean water shortly after removing them from the chamber, then dry them to minimize rusting. Remember that ferrous metals will oxide rapidly when machining, etc. expose fresh metal (as is the case with vibratory processing). VF100 will provide temporary retardation of rust formation. Depending on humidity, temperature, and other conditions the temporary rust inhibition will be from a few hours to several days. If your materials require longer protection, concentrated rust inhibitors are available that you may use to dip your parts in post vibratory process to inhibit rust formation for several days to several months. NOTE: VFRI8B may be used as a vibratory soap in concentrations up to 8 ounces per gallon of water; used as such it provides superior rust retardation. For special problems with rust or other staining consult with your metals supplier, or C&M Topline.

Polishing

Many materials may be brought to a fine, lustrous, low RMS finish by using non-abrasive ceramic polishing media together with a burnishing compound such as VF103 or VF150 mixed with the water. Mix these compounds with water at a concentration of 1 to 4 ounces per gallon of water. Clean and dry your parts as described above immediately after processing.



Many materials may be polished to a high luster using special media such as walnut shell, corncob, etc. Typically, these types of media are used dry, without the use of fluids. If you wish to use dry process media do not use the fluid system. It will also be necessary to plug in the outlet drain of your Mr. Deburr chamber to prevent the media from escaping out the outlet. This can be done using common plumbing devices available at ordinary hardware stores, or from C&M Topline. **Never operate the fluid pump dry. Doing so may damage the pump.**

Tips for Optimal Operation

It is impossible to anticipate all possible combinations of materials, shapes, media, and compounds that customers may use in this equipment. It is therefore not possible to provide specific directions for media selection, compounds, process times, etc. There are, however, general guidelines that will help to target the optimum process. These include:

- Select your media and compounds after consulting with C&M Topline, a qualified media supply house, or your distributor. See the previous section on using fluids and compounds.
- Clean your equipment regularly. This will help in keeping your processed parts free of stains, dust, etc.
- Use fresh fluids and change them often. It is recommended that you change fluids once a day or every 8 hours of operation. Organic fluids left sitting for many days can turn rancid.
- Clean and rinse parts quickly after processing. Nonferrous parts may stain if not cleaned and dried properly. Ferrous parts may rust. There are compound additives that will help in removing and/or preventing part staining.
- Media wears out in time. The longer media is used the less its abrasive power. Softer materials such as aluminum tend to clog the media, harder materials tend to wear the surface of the media. The use of fluids will help to optimize your results. C&M Topline recommends that you establish a regular schedule for changing and discarding your media. You will gain knowledge regarding process times, and media life. Keeping records of your process variables will help you optimize your process.

Further Troubleshooting

- Check the V belt to see that it is not too tight. It should have about 3/4" of deflection halfway between the pulleys at 2-3 lbs for the DB300 and 2" of deflection for the DB600.
- The media level should be 5" from the top of the tank. If the level of media drops too low, the media will not tumble as vigorously
- Most of the time the problem is that the media has become dirty or contaminated, which makes the media sticky and prevents proper tumbling. Should the media become dirty or contaminated, thoroughly clean the fluid container, refill it with clean water and add two or three cups of some low foaming detergent such as "Simple Green" or "409". Run the machine 5 to 10 minutes and repeat the process once more. Then refill the container with water and your regular deburring compound. If you have this problem repeatedly, increase the amount of compound and clean the fluid container more often.

Recommended Maintenance

Maintenance consists of cleaning the unit, assuring mechanical fasteners are secure, assuring the drive belt is properly tensioned, and occasionally lubricating the drive shaft bearings.



After Initial 24 Hrs of Operation

- Adjust Drive Belt Tension – 1-2” Deflection at 2-3 lbs for the QDB3/DB300
- Inspect For Loose Hardware

Every 30 Days of Operation

- Adjust Drive Belt Tension – 1-2” Deflection at 2-3 lbs for the QDB3/DB300DB300
- Lubricate Bearings – NLGI#2 Lithium or Lithium Complex, Caution – *Do not use excessive grease.*
 - *Bearing zerk fittings located on bearing flange inside case. Remove front panel to access*
- Torque Bearing Mounts – 150-200 ft-lbs
- Torque Motor Mounts – 15 ft-lbs
- Inspect For Loose Hardware including anchor bolts
- Clean as Required

Special note on bearing lubrication

Easy access to the bearing grease zerk fittings is provided inside the frame. This is accessed by removing the front panel. See figure 2 for zerk locations. Use a lithium based grease from any auto parts store.

It is very important that you **DO NOT OVER GREASE** the bearings. Too much grease will cause overheating. One squirt with a hand grease gun every 100 hours of operation is sufficient. A small amount of grease at frequent intervals is preferable to a large amount at infrequent intervals. If the bearings seems to be changing pitch or noise volume it may be time to service or replace the bearing.

Visit www.cmtopline.com for replacement parts. We also offer full bearing assembly rebuilds. Contact us at info@cmtopline.com for details.



Figure 2 QDB3 Internal Configuration. Zerk locations circled in red

Special note about the motor mount and drive belt(s)

Do not over tighten the drive belt. The machine will run better with a drive belt that in another application would appear to be running too loose. **Over tightening the drive belt will result in premature motor failure.**

Warranty service

Should you require warranty service please contact C&M Topline or your distributor. C&M Topline may be reached at info@cmtopline.com. The motor manufacturer warrants the main drive electric motor; to obtain motor warranty service contact the motor manufacturer's service center in your area. **NOTE: when inquiring about warranty service or replacement parts please be prepared to provide the actual machine model number, date of purchase, and whether it was purchased through a reseller.**

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Modifications to your vibratory chamber

CAUTION: Modification of the machine from its as shipped condition from the factory may create a safety hazard and may void the factory warranty. If you have any questions in this regard, please consult C&M Topline before making any modifications.

Supplies and Parts

C&M Topline offers most media and compounds for sale on our website at cmtopline.com. A media and compound availability guide are included with this manual. We also have helpful tips and pictures on our Finishing 101 website section which includes real before and after finishing test results. All C&M Topline machines are produced with line replaceable parts. Many parts can be ordered directly online. See the following parts schematics to help identify your replacement parts needs.