FL Three Roll Mill Manual

Version 1.0

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Overview

FL Three Roll Mill is a table-top adjustable three roll mill that reduces particle size in ointments, creams, pastes, gels, and suspensions for pharmaceutical compounding or other applications. Smaller and more uniform particles means more active ingredient surface area, maximizing the treatment benefits. The three rollers rotate in opposite directions and at different speeds, creating shear force that moves the compound through the Mill.

Features:

- Engineered for durability
- Inox (SS304 and SS316) & Anodized Aluminum construction
- Durable Ceramic Rollers made from 99.7% purity Aluminum oxide
- Reduces particle size to below 20 microns, depending on the product and number of passes
- Safety Bar for use while cleaning
- Auto-stop safety feature if rollers jam due to foreign material
- Can be used for milling other products such as inks or paints
- Shipped in a light weight polypropylene box with custom foam padding for protection from vibration or damage. Box can be used for storage and transport

Recommended Environmental Conditions

The FL Three Roll Mill will operate normally in temperatures from 0º C to 45º C. However, both temperature and humidity affect the viscosity and integrity of the compound. It is best to follow temperature and humidity guidelines for the ingredients in your compound.

Parts Identification

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Parts Identification

	Part Name	Description / Application
1	Hopper (optional use)	For use with larger product volume
2	Rollers (3)	Provide shearing action to reduce particle size
3	Scraper Handle	Used to install /remove Scraper
4	Scraper	Scrapes the product from front Roller
5	Roller Guide Lock Bolts (2)	Hold Roller Guides in place
6	Roller Guides (2)	Guides product through mill (adjustable)
7	Gap Adjustment Knobs (2)	Used to adjust gap between Rollers
8	Splash Tray	Catches product that falls from Rollers
9	Roller Rotation Knob	Used to manually rotate Rollers
10	ON/OFF switch	Start or stop mill
11	C14 Inlet	Electrical connection
12	Label	Serial Number & voltage requirements
13	Safety Bar	Protects from unwanted objects entering Rollers during cleaning
14	Safety Bar Lock Knobs (2)	Lock Safety Bar in place during cleaning
15	Product Tray	Collect product that falls off Scraper
16	Tool Kit	Allen Keys (2, 2.5, 3, 4), Wrench 7-8, Phillips Head Screwdriver, Fuse (4)
17	Power Cord	Connects mill to wall outlet

Technical Specifications

	Metric	English
Outer Dimension (W x D x H) with Hopper and Scraper	260 x 415 x 335 mm	10.2 x 16.3 x 13.2 in
Net Weight	20 kg	44 lbs
Roller Diameter	50 mm	2.0 in
Roller Length	150 mm	5.9 in
Roller Gap Width	10 - 220 microns	0.39 - 8.66 mils
Hopper Volume	750 ml	25 fluid ounce
Shipping Weight	23 kg	51 lbs

Electrical Requirements			
Input Voltage (as ordered)	110-130 V / 60 Hz	220-240 V / 50 Hz	220-240 V / 60 Hz
Power Requirement	200 watt	200 watt	
Fuse	12 amps	6 amps	
Full Load Current / Peak Start Current	4.3 amp / 12 amp	1.9 amp / 5 amp	
Permitted voltage drop	± 10 %	± 10%	

Operational Safety

1. **Mill is designed to pull in all material coming into contact with the Rollers**. NEVER allow any object not intended for inclusion in the ointment to touch the Rollers during operation.
    a. Hair should be tied back or in a hair net.
    b. Avoid wearing loose clothing or jewelry
    c. Do not place spatula or anything other than ointment between Rollers.
    d. Keep hands away from Rollers.
2. If an object gets lodged in the Rollers, they will stop rotating. Turn the mill OFF and disconnect from power supply. Use the Roller Rotation Knob to spin Rollers in reverse direction to remove the object. If the object doesn't dislodge, increase the Roller gap and try again.
3. Do not adjust Rollers while Mill is running.
4. Operate Mill on a level surface.
5. Always unplug Mill before disassembling or cleaning.
6. Do not open cover and change factory settings.
7. Follow directions in this manual.

Electrical Safety

1. Only connect to supply voltage indicated on the side label.
2. Do not remove ground prong.
3. Plug into a 3-prong grounded outlet.
4. Only use a 3-prong extension cord.

Production Set-up

Clean the Mill before first use. Follow instructions beginning on page 15.

1. Slide Splash Tray under Rollers.

2. Loosen Roller Guide Lock Bolts. Place Roller Guide between center and rear Rollers, flat side up.

3. Slide Roller Guide into hole. Repeat for second Roller Guide on opposite side.

4. Adjust distance between Guides based on volume of product. Tighten Roller Guide Lock Bolts to hold Guides in place.

5. Press down Scraper Handle. Slide Scraper metal guides (see inset) over the metal plate attached to the Scraper Handle. Insert as far as it goes.

6. Slowly release the Handle so the Scraper edge rests gently against the front Roller.

7. Place Product Tray under the Scraper to collect any product that may slide off.

8. For product volume over 300ml, push Roller Guides all the way to the outside and slide Hopper onto Guides.

9. Connect to power supply.

Production Run

Before beginning, see tips on page 13.

1. Use mortar and pestle to mix product before milling.

2. Ensure Mill is set up according to pages 9-10.

3. Adjust Roller gaps. See page 13 for tips.

4. Use rubber or plastic spatula to place product between Roller Guides. Scrape spatula flat against rear Roller to remove product.

5. Turn mill ON.

6. Product passes through mill and is scraped onto the Scraper. When all product is passed through, turn mill OFF.

7. If further particle size reduction is needed, pass the product again through the mill with a reduced gap between Rollers (Steps 3-6). See Tips below

8. Use spatula to remove product from Scraper. Stir for even product distribution. The product is ready for dispensing.

Tips:

1. Order the optional Hegman Gauge (Item MM1 HMG) to test particle size. See Accessories.
2. Do not put product back in mortar and pestle to avoid introducing larger particles left behind from previous use.
3. Fully clean spatula before scraping product off Scraper to avoid introducing larger particles back into the product.

Roller Gap Adjustment / Tips

A. Adjust Roller Gaps

The FL Three Roll Mill has 3 Rollers: 1 stationary center Roller and 2 adjustable Rollers. The gap setting between the Rollers is determined by the product's viscosity, surface tension, particle size, moisture content, and sometimes temperature. Specific recommended settings cannot be given.

To assist you in setting your Rollers, we offer these guidelines:

1. Each Gap Adjustment Knob has settings from 1 to 7: finest to largest particle size. See table on the right.
2. Each number on the Gap Adjustment Knob adjusts the gap, and therefore the particle size.
3. The front gap should be the same or 0.5 to 1 number less than the rear gap so product doesn't build up within the Mill.
4. Pass product through the mill several times, reducing the gap incrementally until desired particle size and product texture is achieved. Typically product requires 2-3 passes.

Gap Setting	Gap width in microns
1	10-15
2	25-30
3	50-55
4	90-95
5	130-135
6	190-195
7	220-225

As the product exits Rollers onto the Scraper, check for desired consistency and particle size using thumb and forefinger, or by using a Hegman Gauge (Optional accessory MM1 HMG).

B. Product Preparation Tips

1. Pre-mixing with mortar and pestle greatly increases the efficiency of the mill. Do not use Mill to crush whole tablets.
2. Mix product again after milling to ensure uniform particle dispersion. The mill reduces particle size but does not distribute ingredients.
3. If initial particle size is large, or product is more viscous, start with larger Roller gaps and reduce gaps for each pass through the mill.
4. Passing product through the mill a second time using the same gap setting does not reduce the particle size. Reduce the gap setting for each pass. The smallest gap setting may benefit from a second pass at that setting.
5. Plan for up to 5% waste. It is impossible to use all product from Rollers and scraper.

C. Operating Tips

1. For product volumes above 300 ml, optionally place Hopper between rear and center Rollers before turning ON. Leave Roller Guides loose (do not tighten the Roller Guide Bolts) to improve product flow through mill.
2. If Rollers stop or run with difficulty during production, turn OFF. Increase Roller gaps before proceeding.
3. Scraper should press gently and evenly on the front Roller to remove product. If it is worn or warped, replace it.
4. Do not operate Rollers without product to avoid unnecessary wear on the Scraper.
5. If Roller Guides slide during the run, tighten the Roller Guide Lock Bolts.

Cleaning / Maintenance Tips

1. Clean the Mill before first use.
2. Clean the Mill immediately after use to avoid dried-on product.
3. Use supplied Safety Bar to avoid objects entering Rollers during cleaning.
4. Only the Roller Guides and Safety Bar are top rack dishwasher safe, though hand washing is recommended. All other loose parts should be hand washed.
5. Parts can be wiped with Isopropyl Alcohol 70% solution.
6. DO NOT remove any panels to access motor area. For technical support, see back of this manual.
7. DO NOT immerse Mill in water.
8. Allow parts to dry fully before re-assembling Mill.

Safe Cleaning Products

1. Hand dishwashing liquid diluted in water (up to 50% dilution). Recommended water temperature: 55-65º C (130-150º F).
2. Isopropyl Alcohol 70% solution. Wipe parts with a cloth dipped in isopropyl alcohol, then immediately wipe dry with a clean cloth.
3. Vinegar (4% acetic acid) or citric acid can help remove discoloration from Rollers. Wipe or brush on the diluted acid solution. Rinse thoroughly with water.
4. Non-abrasive cleanser such as Soft Scrub® with Bleach, Ajax®, Comet®, or Vim®.

Cleaning Instructions

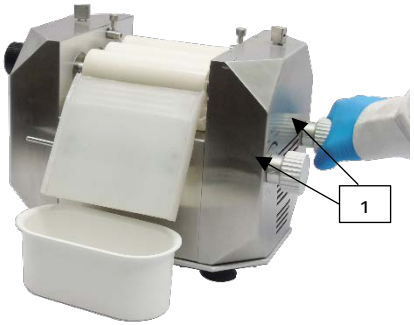
Items Required:

- Cloths, sponges, or paper towels (both wet and dry)
- Optional non-abrasive cleanser such as Soft Scrub® with bleach or Vim®
- Hot, soapy water (55-65° C / 130-150° F), about 50-100 ml. Hand dishwashing liquid recommended. For greasy products, hot water is especially important. You can also use an alkaline detergent or a solvent such as 70% Isopropyl Alcohol.
- Hot, clear water (55-65° C / 130-150° F), about 250-500 ml.

For faster cleaning using less water, use this specially developed and tested cleaning procedure.

1. Loosen Roller Guide Lock Bolts and remove the Roller Guides.

Note: if Safety Bar is installed, turn the Safety Bar Lock Knobs and remove it. See photo in step 8.

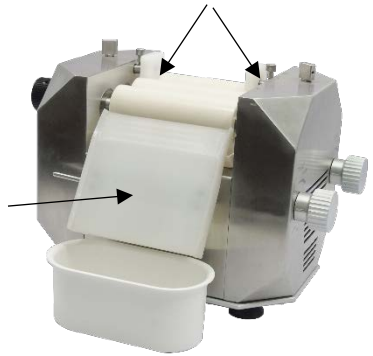


2. Set both roller gap settings to 1.

3. Run for 30-60 seconds to remove residual product. Meanwhile clean the Roller Guides with a paper towel.

4. Press down Scraper Handle and lift Scraper to remove. Wipe Scraper edge with a paper towel.

5. Wipe the Rollers while rotating Manual Rotation Knob. Wipe for at least 3 revolutions of the Rollers.



6. Reassemble the Scraper and Roller Guides.

7. Unscrew Safety Bar Lock Knobs 2-3 turns and line up parallel to front of Mill.

8. Fit Safety Bar over Lock Knobs and turn to tighten. Check that Splash Tray below Rollers is empty. If not, empty it.

9. Turn Mill ON. Dip a clean cloth or sponge into soapy water. Hold it on the spinning Rollers and wipe them while pouring about 50 ml soapy water slowly into the rear gap between center and rear Rollers.

10. Pour about 100ml clear hot water slowly into the rear gap to rinse. After all water is scraped off, turn Mill OFF. Empty Splash Tray.

11. If Rollers are not discolored, continue to step 12. If Rollers are discolored, set roller gaps to 1 and run non-abrasive cleanser (see Safe Cleaning Products on page 14) through Mill. Hold a sponge or clean cloth against Rollers to remove the cleanser. Continue to step 12.

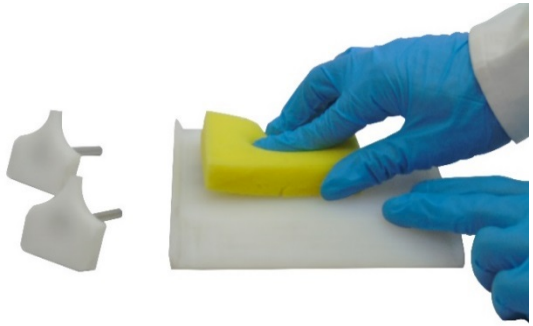
12. Remove the Safety Bar, Roller Guides and Scraper.

13. Increase the roller gap settings to 3 or more.

14. While spinning the Manual Rotation Knob, pour no more than 250ml hot water slowly over the Rollers, or use a solvent in which the product last processed is soluble. Make sure the water passes over Rollers and their edges and collects in Splash Tray.

15. Carefully remove Splash Tray and empty collected water. If Rollers require more rinsing, repeat step 14.

16. Use paper towel to dry the Rollers while rotating the Manual Rotation Knob.



17. Hand wash the loose parts: Roller Guides, Scraper, Splash Tray, Product Tray, Safety Bar, and Hopper (if used) in warm water mixed with hand dishwashing liquid.

Rinse all parts with hot water / solvent. Dry parts using a paper towel or clean cloth.

18. When parts are dry, reassemble the Splash Tray and Roller Guides. Store the Scraper OFF the Mill to avoid warping.

Troubleshooting

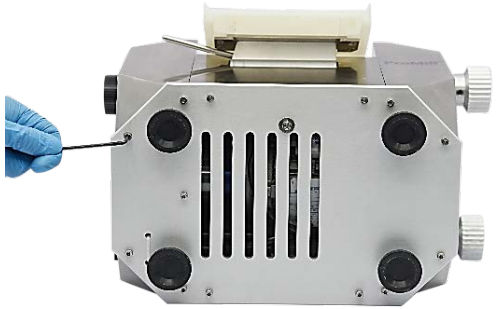
1.	**Product splashing out of Mill during operation**	
1.1	Roller gaps require adjustment.	Increase front roller gap. Front gap should be the same size or smaller than rear gap.
1.2	Gap visible between Scraper and Front Roller.	Make sure Scraper is pressed all the way down and evenly onto the metal plate. Replace worn or warped Scraper.
1.3	Roller Guides not inserted into place. Product is moving into space between edge of Roller and side wall of Mill.	Install Roller Guides to keep product in place.
2.	**Product leaking under sides of Hopper**	
2.1	Roller Guides are too tight.	Loosen Roller Guide Bolts to allow some play in Roller Guides.
3.	**Product spreads left and right on Rollers**	
3.1	Roller Guides not inserted into place.	Install Roller Guides. See page 9 steps 2-4
3.2	Rollers set too close together.	Increase both Roller gaps. Front gap should be the same size or smaller than rear gap.
4.	**All Rollers are rotating but product does not reach Scraper, or product is on only one section of the Rollers**	
4.1	Front Roller gap is too large.	Reduce front gap to be the same size or smaller than rear gap.
4.2	Scraper not installed properly.	Check placement as per page 9, steps 5 & 6.
5.	**Target particle size not achieved**	
5.1	Initial particles are large, or product is viscous or thick.	Pre-mix with a mortar and pestle before running through the mill. Use wider gap setting for first pass. Reduce gap incrementally in next passes.
6.	**Mill does not start and ON/OFF switch does not light**	
6.1	Fuse may be blown.	Replace fuse. Four spare fuses are included in Tool Box with original shipment. Purchase more at local market or order replacement part (see page 23 for specifications). To replace fuse, see page 22.
7.	**Some but not all Rollers are rotating**	
7.1	Roller gears are broken.	See Check Roller Gears instructions on page 21. To order replacement part see page 23.
7.2	Roller Gears are out of position.	This can happen if Drive Belt is too tight or an object lodges between rear rollers. See Check Roller Gears instructions on page 21. Contact Technical Support for instructions for how to Replace or Reposition Roller Gears.
8.	**Rollers not rotating or rotating very slowly**	
8.1	Drive Belt is loose or worn.	To See page 19 to check or adjust Drive Belt tension.

Tighten Drive Belt

Follow these procedures to determine if Drive Belt requires tightening or replacement.

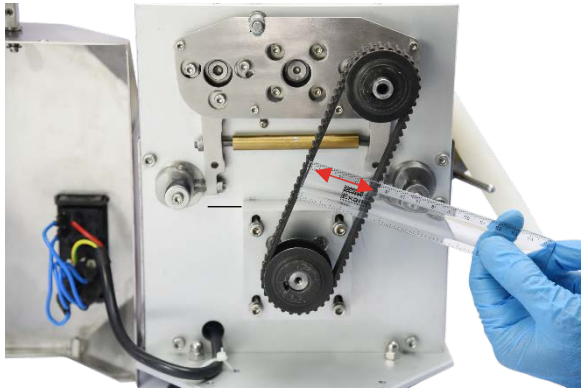
Tools Required: Phillips Head Screwdriver, 3mm Allen Key, (both in Tool Kit), metric ruler

1. Unplug Mill. Remove Splash Tray. Use Phillips Head Screwdriver to remove 2 top left screws.



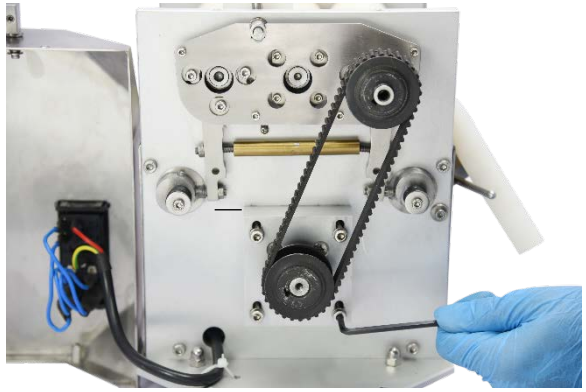
2. Lay Mill with Scraper facing up, placing on a cloth to avoid scratches. Use 3mm Allen key to remove 2 screws with washers on bottom left. Save screws.

3. Stand Mill upright. Pull to remove Roller Rotation Knob. Remove Left Cover and place it toward back of Mill.



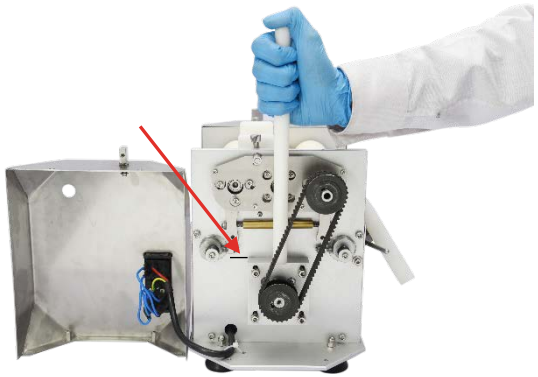
4. To test if Drive Belt is loose, first measure in mm the internal distance of Drive Belt at center.

5. Firmly squeeze Drive Belt at center. Again measure the internal distance. If the difference in distance between steps 4 and 5 is more than 17mm, the Drive Belt needs tightening. Proceed to step 6. Otherwise, if no Rollers are rotating or they are rotating very slowly, the Drive Belt must be replaced. See Replacement Parts on page 23 and contact Technical Support.

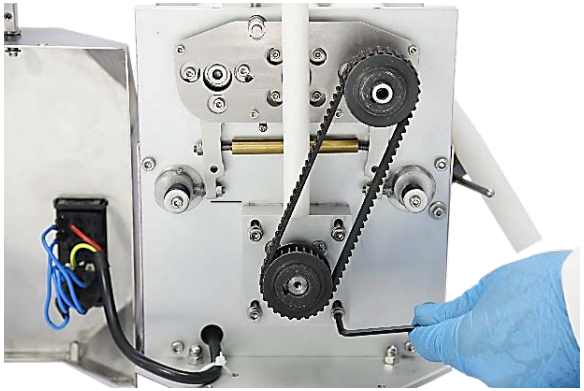


6. Use 4mm Allen key to loosen, but not remove, the 4 Motor Housing screws.

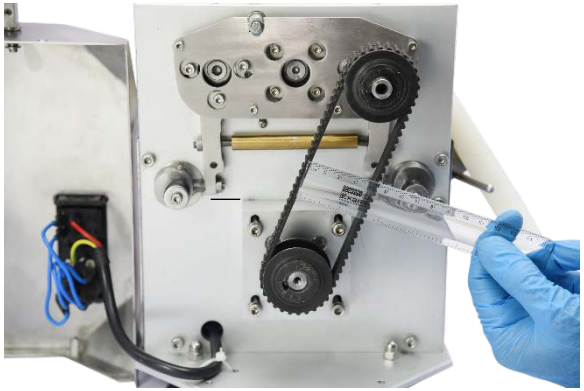
Tighten Drive Belt



7. Press down Motor Housing 1 to 1.5mm manually, or use any plastic / wooden rod or bar. Use the factory setting line to gauge distance moved.



8. While pressing the Motor Housing, use 4mm Allen key to tighten the 4 Motor Housing screws in place.

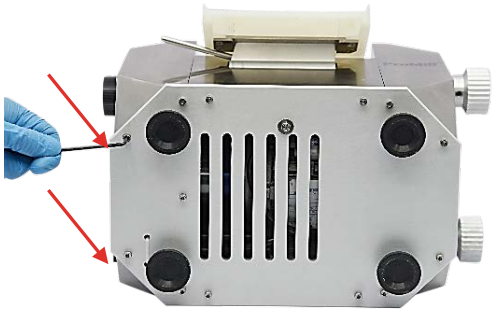


9. Re-test tension by following steps 4 and 5.

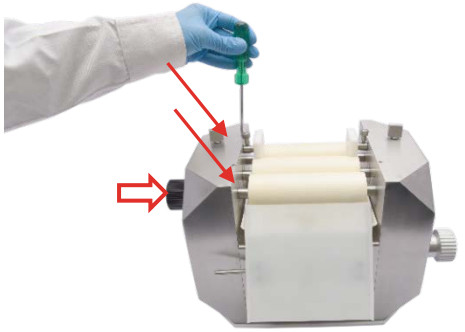
s10. If the difference is **from 12-17mm**, the Drive Belt tension is good. Proceed to Step 11.

If the difference is **less than 12 mm**, loosen the Motor Housing and move it up a little. Re-test tension by following steps 4-5.

If the difference is **more than 17mm**, repeat steps 7-9 to move the Motor Housing another 1-1.5 mm and re-test tension. If the difference is still greater than 17mm, the Drive Belt must be replaced. See Replacement Parts on page 23 and contact Technical Support.



11. Close the Left Cover. Lay Mill with Scraper facing up, placing on a cloth to avoid scratches. Insert the 2 bottom screws with washers and loosely tighten, then evenly tighten them using 3mm Allen Key.



12. Reassemble 2 screws on top using Phillips Screwdriver. Press Roller Rotation Knob back in place.

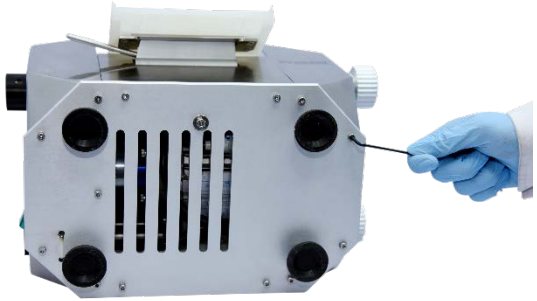
Note: If top screws are misaligned, loosen the 2 bottom screws again, then reassemble top screws and tighten them. Tighten bottom screws.

Check Roller Gears

These instructions are used when the motor is running and some but not all Rollers are rotating. The cause could be broken or out of position Roller Gears.

Tools Required: Included in Tool Kit - 3mm Allen Key, Phillips Head Screwdriver

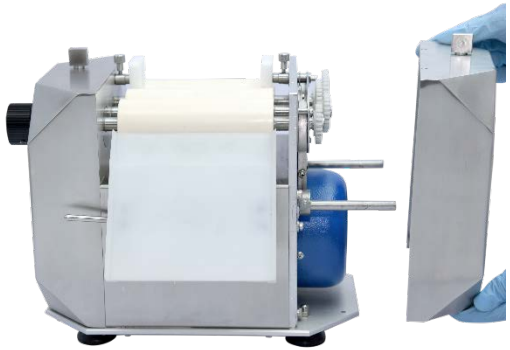
1. Unplug Mill. Use Phillips Head Screwdriver to remove 2 top right screws. Remove Splash Tray.



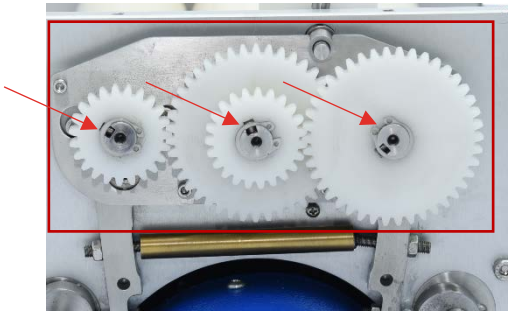
2. Lay Mill with Scraper Plate facing up, placing on a cloth to avoid scratches. Use 3mm Allen key to remove 2 screws with washers on bottom right. Save screws and washers.

3. Stand Mill upright. Use 3mm Allen key to loosen grub screw on each Gap Adjustment Knob 1-2 turns or until Knob can be removed. Do not remove grub screws completely.

4. Remove 2 Gap Adjustment Knobs.



5. Remove Right Cover and place it aside.

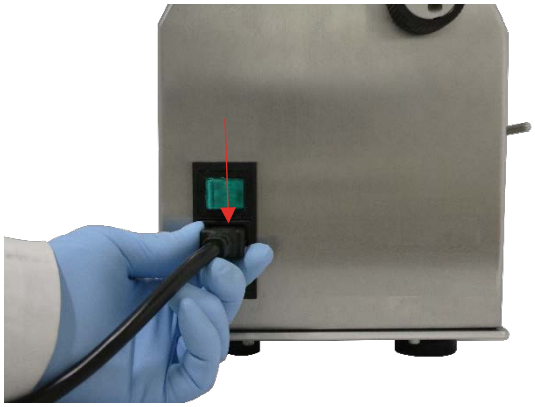


6. Check for damaged gears. Damage includes missing or chipped gear teeth or a crack anywhere in the gear. Use Manual Rotation Knob to rotate gears to check all teeth. Check that the 3 Circlips (metal snap rings) are secure in the grooves of the Roller shafts. If necessary, contact Technical Support for gear replacement instructions.

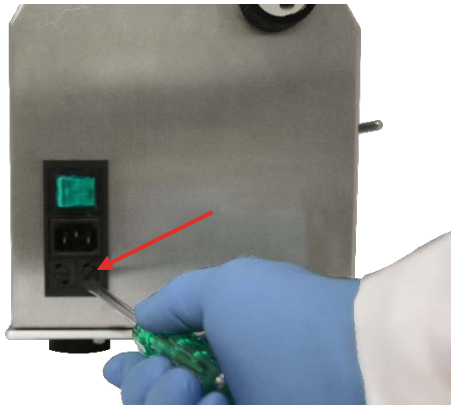
Replace Fuse

Items Required:

- Fuse (1 or 2) – included in Tool Kit. To purchase a fuse, see specs on page 23.
- Flat head screwdriver



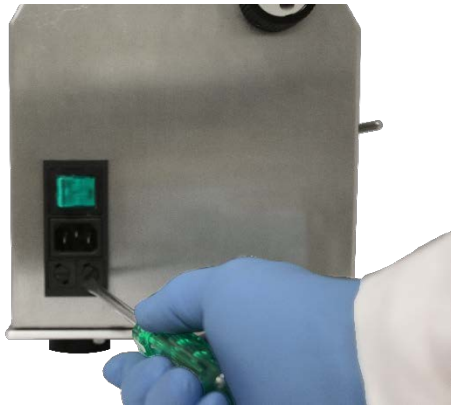
1. Switch OFF Mill. Remove power supply cord from back.



2. Unscrew fuse holder.

3. Remove fuse holder.

4. Remove glass fuse from fuse holder. A blackened fuse or a broken wire indicated the fuse is blown. A multimeter or test lamp could also be used to test fuse.



5. If the fuse is bad, replace with a new one. Put the fuse holder back in place and secure with screwdriver.

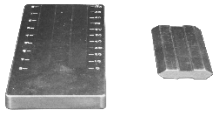
6. Repeat steps 2-5 for the second fuse. Connect the power supply cord and switch on the power. If the switch light does not turn on, call Technical Support for further assistance.

Optional Accessories and Replacement Parts

Optional Accessories

Hegman Gauge

Useful to determine how finely and uniformly ground the particles are within the product.



MM1 HMG

Suspension Plate

Special Scraper for customers making suspension

MM1 SUP

Replacement Parts

Roller Guides

TRM03000

Roller Guide Lock Bolts

TRM03300B

Scraper

TRM04700

Splash Tray

TRM06100

Hopper

TRM03700

Roller Gear Small + 2 Circlips

TRM01300

Roller Gear Large + 2 Circlips

TRM01400

Note: circlip pliers (order separately XX-NEC, MFS0207) required to install these parts

Roller Rotation Knob

TRM01600B

Drive Belt

TRM05400

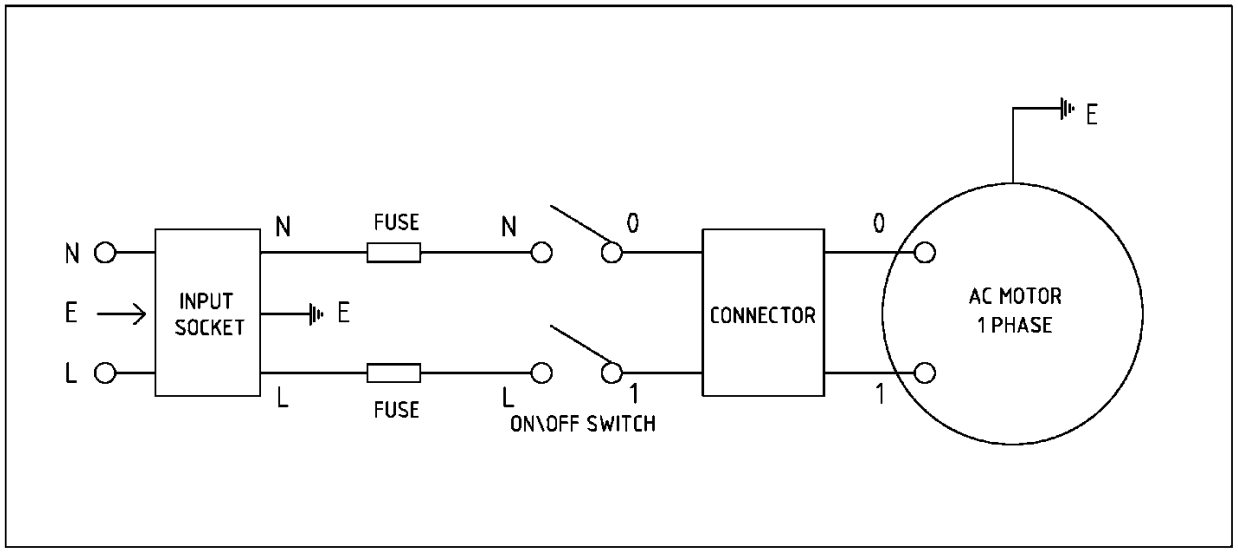
Glass fuse

TRM06811

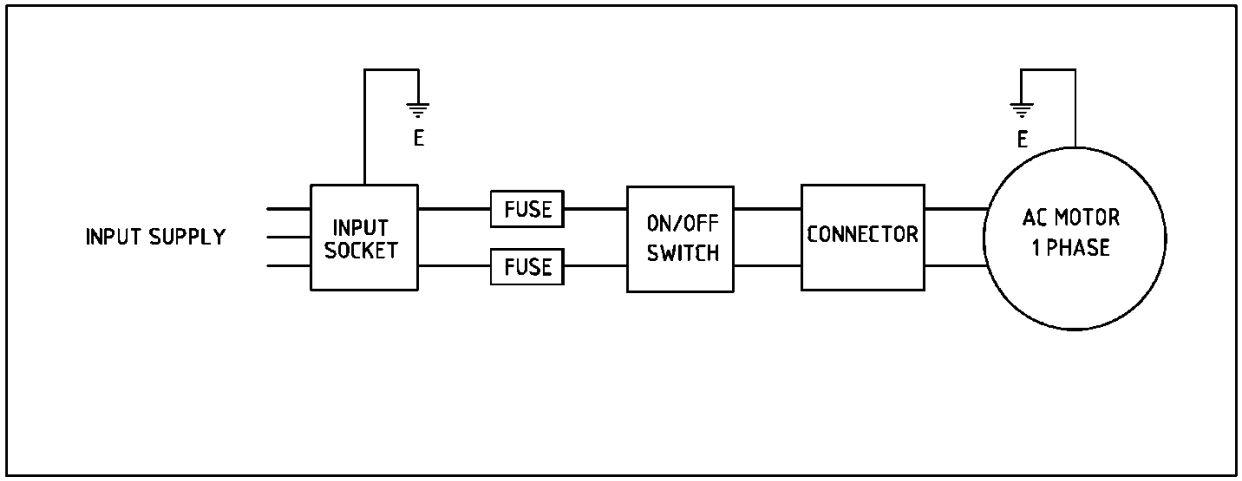
4 included in Tool Kit

Length 20 mm
Diameter 5.3 mm
12 Amp for 110 V
6 Amp for 230 V

Circuit Diagram



Block Diagram



Customer Parts Drawing and Materials Used

Customer Parts Drawing and Materials Used

Part Assemblies:

The FL Three Roll Mill is broken down into groups of parts called Assemblies. The Assemblies are then broken down into their individual part numbers and names. The Drawings shows each of the Assemblies and all of their component parts. Entire replacement Assemblies or replacement individual parts can be ordered.

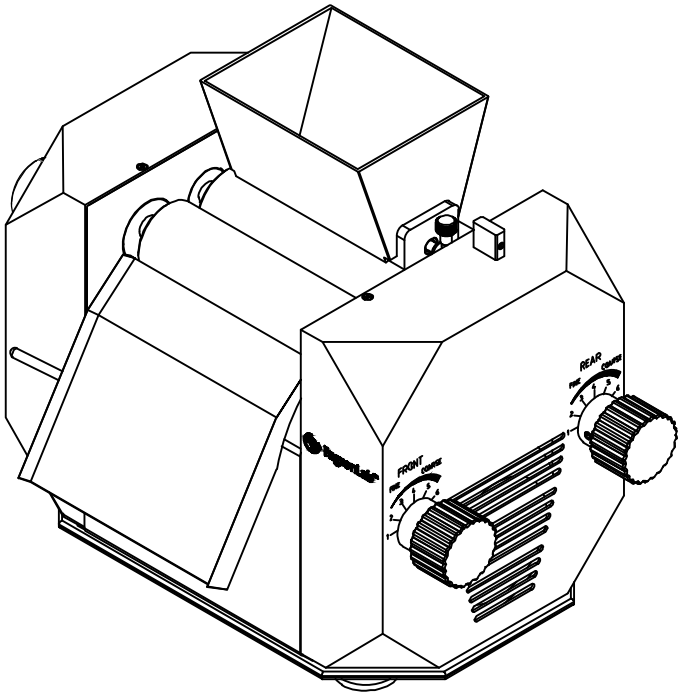
Materials Used:

The Materials table below shows all materials used in product contact parts and cross-reference to the Customer Drawing to show the Material of Construction for each product contact part. Food Grade Status checkmark refers to 21CFR177 and EU10/2011 compliance.

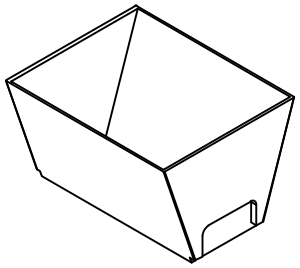
Product Contact Materials		
Material Code	**Description**	**Food Grade Status[1]**
AG	Ceramic Alumina (Al2O3 – 99.7% purity)	GRAS - Generally Regarded as Safe
AH	Ultra-High Molecular Weight polyethylene (UHMWPE)	✓
AI	High Impact Polystyrene (HIPS)	✓
SS	Stainless Steel (Inox) 316	Food Grade Certification not given for metals
*	Product non-contact part	

No materials of animal origin were used during the manufacture of this machine. This product is considered TSE (Transmissible Spongiform Encephalopathy) free.

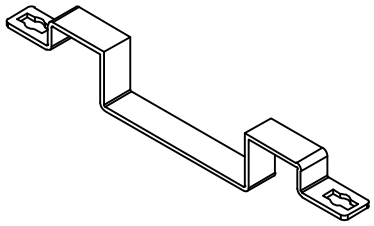
FagronLab TRM	OVERVIEW	DWG. NO.1



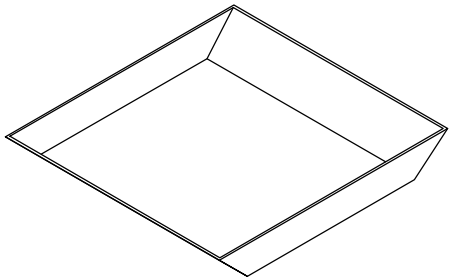
FagronLab TRM
(THREE ROLL MILL)



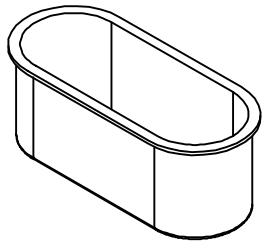
HOPPER
REFER DWG.NO. 9



SAFETY BAR
REFER DWG.NO. 9



SPLASH TRAY
REFER DWG.NO. 9



PRODUCT TRAY
REFER DWG.NO. 9

STANDARD ACCESSORIES

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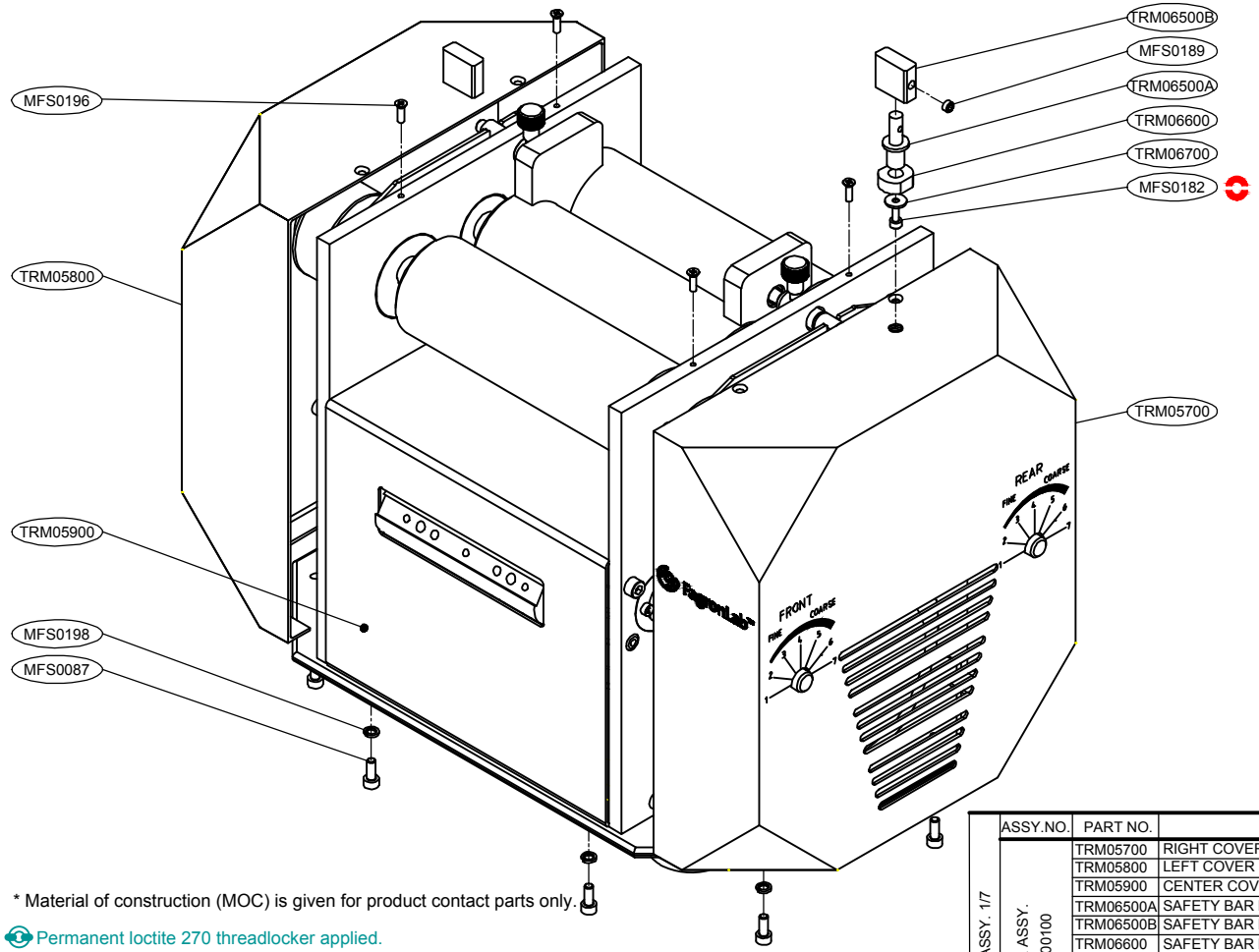
FagronLab TRM	COVER ASSY.	DWG. NO.2



* Material of construction (MOC) is given for product contact parts only.

Permanent loctite 270 threadlocker applied.

Removable loctite 222 threadlocker applied.

F.L.TRM ASSY. 1/7

COVER ASSY. ATRM00100

ASSY.NO.	PART NO.	DESCRIPTION	QTY.	MATERIAL
	TRM05700	RIGHT COVER	1	*
	TRM05800	LEFT COVER	1	*
	TRM05900	CENTER COVER	1	*
	TRM06500A	SAFETY BAR LOCK SCREW	2	*
	TRM06500B	SAFETY BAR LOCK KNOB	2	*
	TRM06600	SAFETY BAR LOCK NUT	2	*
	TRM06700	SAFETY BAR LOCK WASHER	2	*
	MFS0087	ALLEN HD. SCREW (GEAR,BELT & CENTER COV.)	8	*
	MFS0198	SPRING WASHER (GEAR,BELT & CENTER COV.)	8	*
	MFS0196	CSK PHILIP HD. SCREW (GEAR & BELT SIDE COV.)	4	*
	MFS0182	ALLEN HD. SCREW (LOCKING KNOB & SCREW)	2	*
	MFS0189	GRUB SCREW (LOCKING KNOB)	2	*

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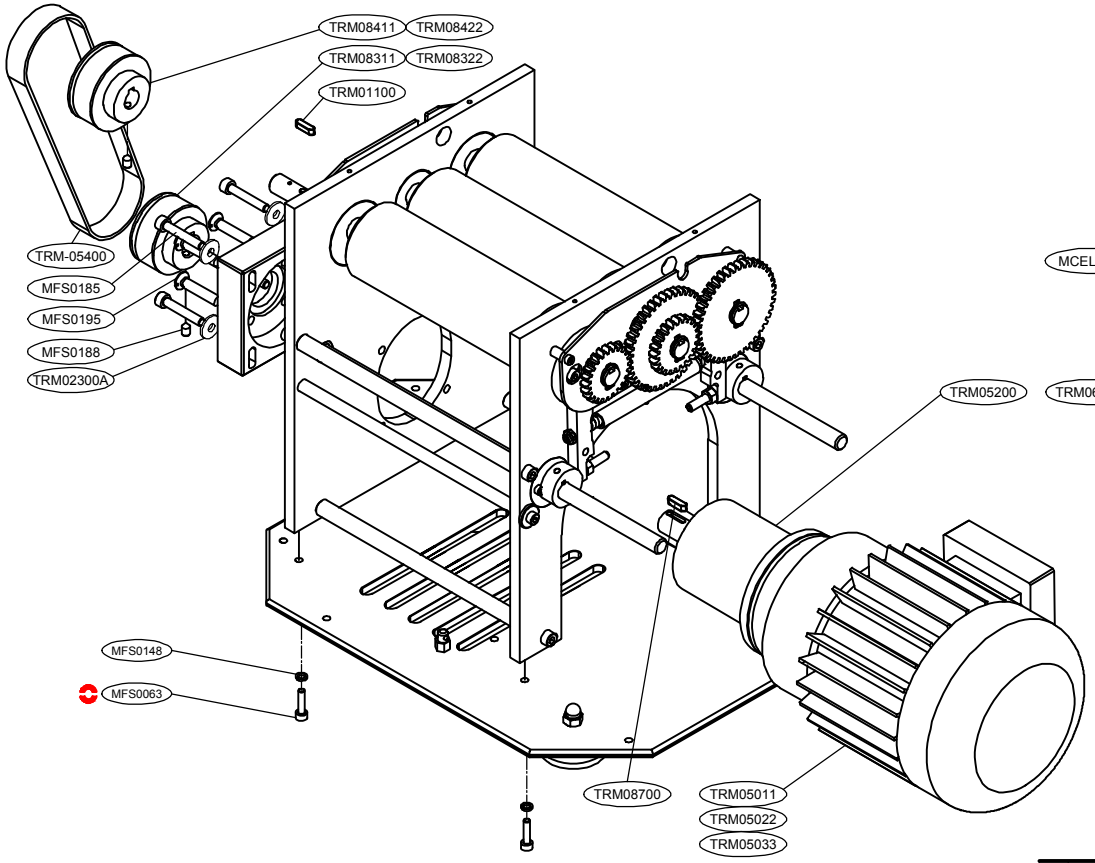
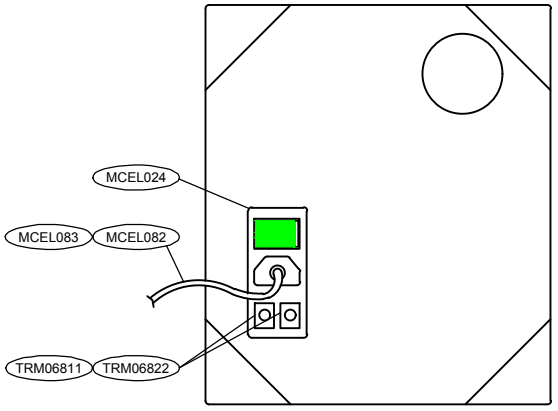
FagronLab TRM	DRIVE ASSY.	DWG. NO.3





VOLTAGE & FREQUENCY SPECIFIC COMPONENTS REFER TABLE BELOW

PART NO.	DESCRIPTION	QTY.	MATERIAL
	110V / 60HZ		
TRM08311	FLAT PULLEY (G. BOX) 60HZ	1	*
TRM08411	FLAT PULLEY (ROLLER) 60HZ	1	*
TRM05011	SINGLE PHASE AC MOTOR 110/60HZ	1	*
TRM06811	GLASS FUSE 12 AMPS 20mm	2	*
MCEL082	POWER CORD (USA) 1.3 SQ. MM	1	*
	240V / 60HZ		
TRM08311	FLAT PULLEY (G. BOX) 60HZ	1	*
TRM08411	FLAT PULLEY (ROLLER) 60HZ	1	*
TRM05033	SINGLE PHASE AC MOTOR 240/60HZ	1	*
TRM06822	GLASS FUSE 6 AMPS 20mm	2	*
MCEL083	POWER CORD (EUROPE) 1.3 SQ. MM	1	*
	220V / 50HZ		
TRM08322	FLAT PULLEY (G. BOX) 50 HZ	1	*
TRM08422	FLAT PULLEY (ROLLER) 50 HZ	1	*
TRM05022	SINGLE PHASE AC MOTOR 220/50HZ	1	*
TRM06822	GLASS FUSE 6 AMPS 20mm	2	*
MCEL083	POWER CORD (EUROPE) 1.3 SQ. MM	1	*

COMMON COMPONENTS REFER TABLE BELOW

F.L. TRM ASSY. 2/7

DRIVE ASSY. ATRM00200

ASSY.NO.	PART NO.	DESCRIPTION	QTY.	MATERIAL
	TRM05200	GEAR BOX	1	*
	TRM05400	DRIVE BELT	1	*
	TRM01100	KEY (PULLEY ROLLER SIDE)	1	*
	MCEL024	2 FUSE GREEN NEON INLET	1	*
	TRM02300A	WASHER (MOTOR HOUSING / EYE BOLT)	4	*
	TRM08700	KEY (GEAR BOX)	1	*
	MFS0195	CSK PHILIP HD. SCREW (MOTOR HOUSING)	4	*
	MFS0185	ALLEN HD. SCREW (MOTOR HOUSING)	4	*
	MFS0188	GRUB SCREW (DRIVE PULLEY)	2	*
	MFS0063	ALLEN HD. SCREW (VER. PLT. GEAR & BELT SIDE)	5	*
	MFS0148	SPRING WASHER (VER. PLT. GEAR & BELT SIDE)	5	*

* Material of construction (MOC) is given for product contact parts only.

Permanent loctite 270 threadlocker applied.

Removable loctite 222 threadlocker applied.

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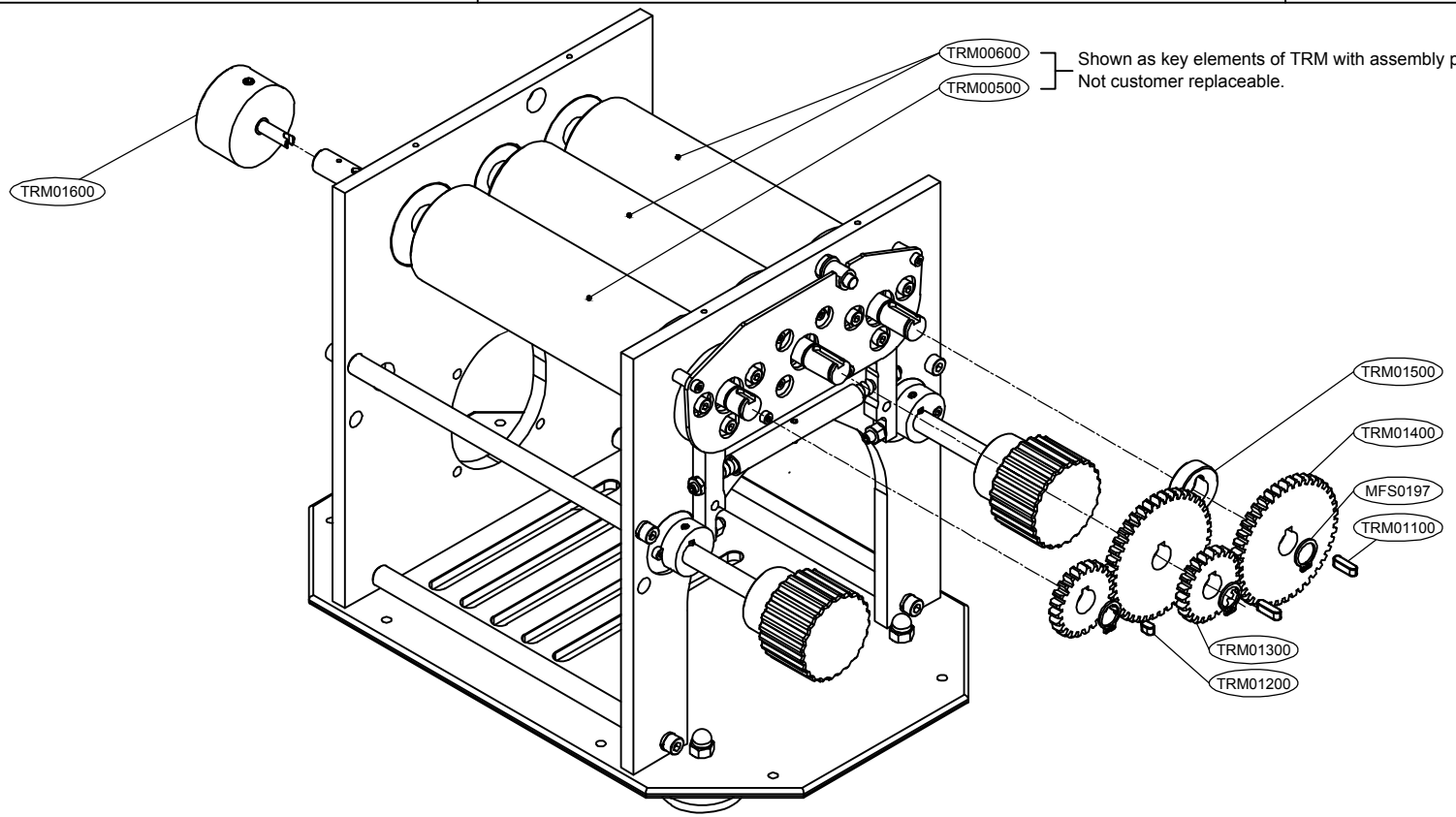
FagronLab TRM	ROLLER ASSY.	DWG. NO.4



* Material of construction (MOC) is given for product contact parts only.

Permanent loctite 270 threadlocker applied.

Removable loctite 222 threadlocker applied.

F.L. TRM ASSY. 3/7	ASSY.NO.	PART NO.	DESCRIPTION	QTY.	MATERIAL
	ROLLER ASSY. ATRM00300	TRM00500	FRONT ROLLER	1	AG
		TRM00600	CENTER / REAR ROLLER	2	AG
		TRM01100	KEY A (ROLLER)	3	*
		TRM01200	KEY B (ROLLER)	1	*
		TRM01300	GEAR SMALL	2	*
		TRM01400	GEAR LARGE	2	*
		TRM01500	SPACER	1	*
		TRM01600	ROLLER ROTATION KNOB	1	*
		MFS0197	EXTERNAL CIRCLIP (ROLLER)	6	*

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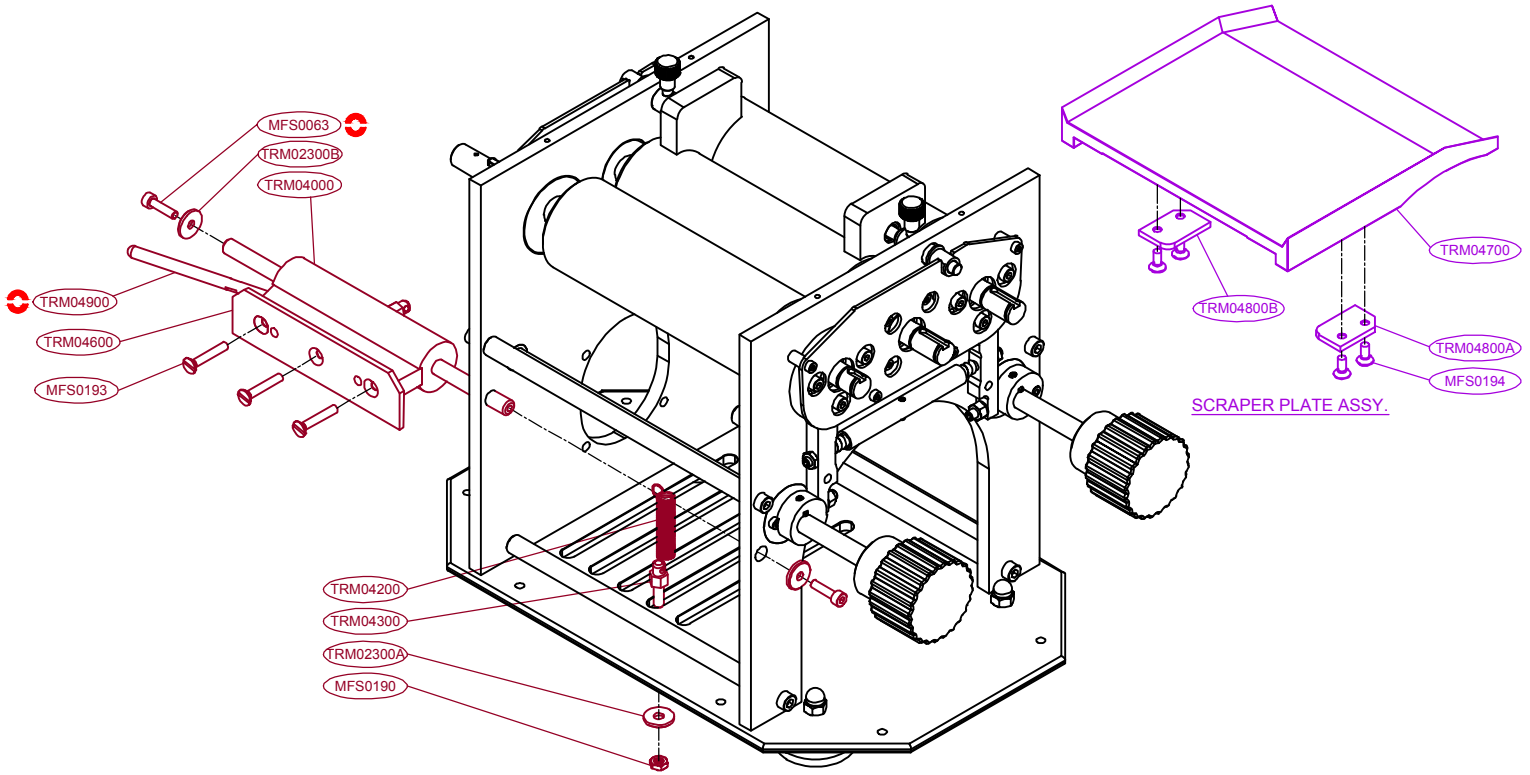
FagronLab TRM	SCRAPER MOUNTING ASSY.	DWG. NO.5



Scraper Mounting assembly should be ordered with all parts shown in brown color

Scraper Plate should be ordered as sub assembly with all parts shown in purple color

* Material of construction (MOC) is given for product contact parts only.

Permanent loctite 270 threadlocker applied.

Removable loctite 222 threadlocker applied.

F.L. TRM ASSY. 4/7

ASSY.NO.	PART NO.	DESCRIPTION	QTY.	MATERIAL
SCRAPER MOUNTING ASSY. ATRM00400	TRM02300B	MC. WASHER SC. ROD	2	*
	TRM04000	SCRAPER BUSH	1	*
	TRM04200	TENSION SPRING SCRAPER	1	*
	TRM04300	EYE BOLT BOTTOM	1	*
	TRM04600	SCRAPER LOCATOR PLATE	1	*
	TRM02300A	WASHER (MOTOR HOUSING / EYE BOLT)	1	*
	TRM04900	SCRAPER HANDLE	1	*
	MFS0193	CSK PHILIP HD. SCREW (SCRAPER LOC. PLATE)	3	*
	MFS0063	ALLEN HD. SCREW (SCRAPER MOUNT. ROD)	2	*
	MFS0190	NUT (EYE BOLT BOTTOM)	1	*
SCRAPER ASSY. ATRM00500	TRM04700	SCRAPER	1	AH
	TRM04800A	MOUNTING LUG LEFT	1	*
	TRM04800B	MOUNTING LUG RIGHT	1	*
	MFS0194	CSK PHILIP HD. SCREW (SCRAPER PLATE)	4	*

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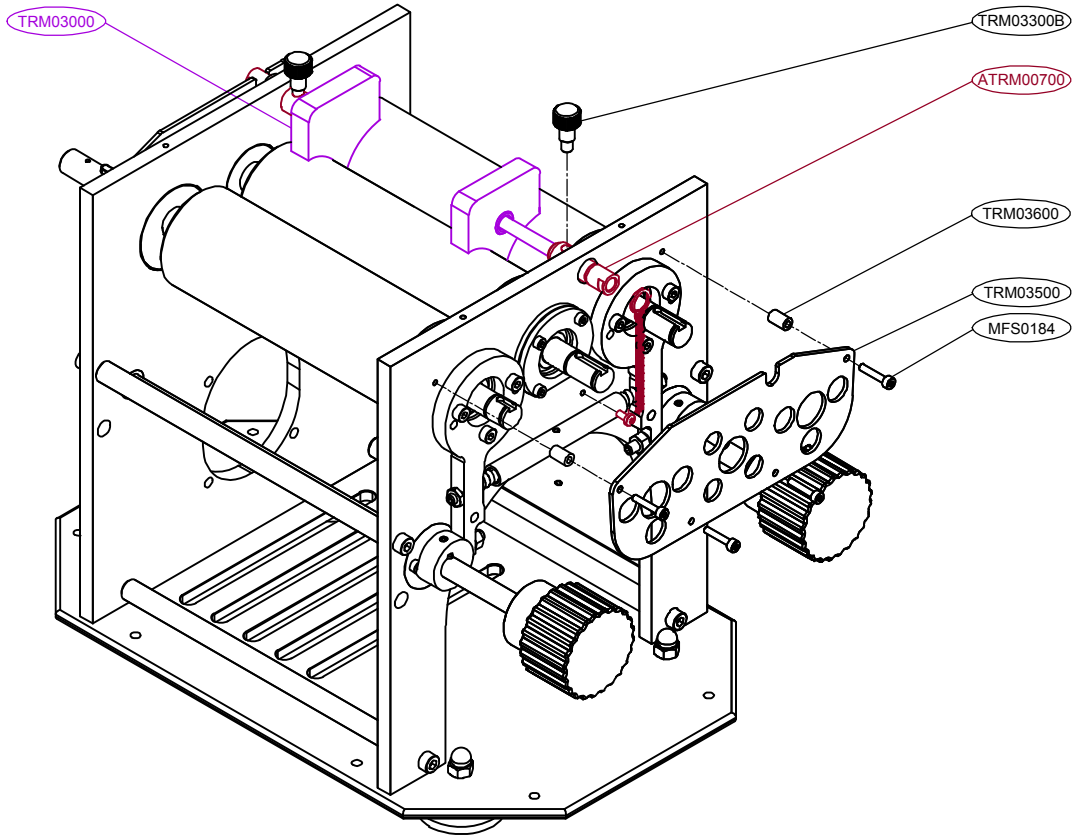
FagronLab TRM	ROLLER GUIDE ASSY.	DWG. NO.6



Roller Guides should be ordered as sub assembly with all parts shown in purple color
Roller Guides Holder assembly should be ordered as sub assembly with all parts shown in brown color
* Material of construction (MOC) is given for product contact parts only.
Permanent loctite 270 threadlocker applied.
Removable loctite 222 threadlocker applied.

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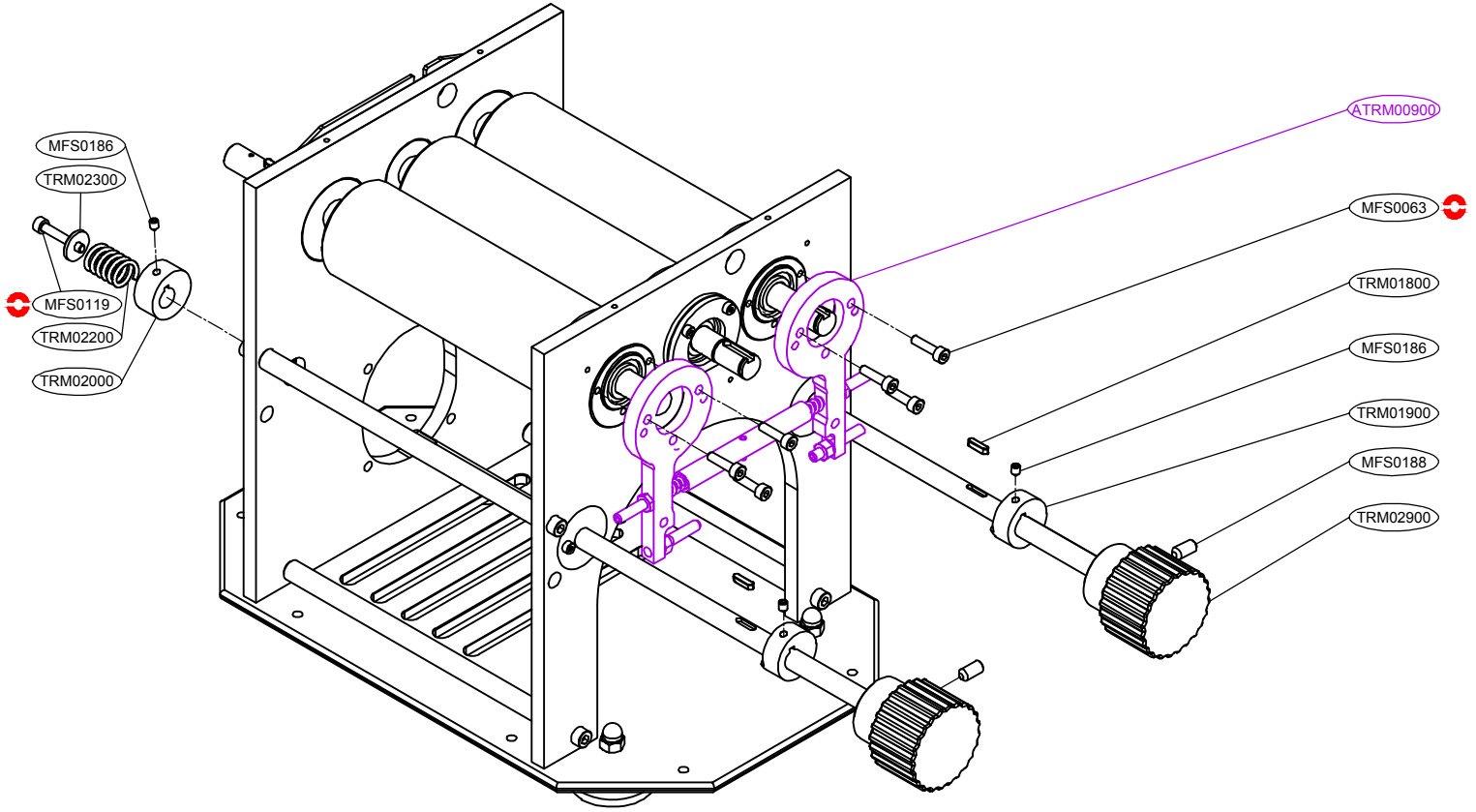
F.L. TRM ASSY. 5/7

ROLLER GUIDE ASSY. ATRM00600 ASSY.NO.	PART NO.	DESCRIPTION	QTY.	MATERIAL
	TRM03500	ROLLER GUIDE HOLDER PLATE	2	*
	TRM03600	SLEEVE G.H. PLATE	8	*
	MFS0184	ALLEN HD. SCREW (ROLLER GUIDE HOLDER PLATE)	8	*
	TRM03300B	ROLLER GUIDE LOCK BOLT	2	*
	TRM03000	ROLLER GUIDES	2	AH
	ATRM00700	ROLLER GUIDES HOLDER ASSEMBLY	2	*

FagronLab TRM	GAP ADJUSTMENT ASSY.	DWG. NO.7



Arm assembly should be ordered as sub assembly ATRM00900 with all parts shown in purple color.

* Material of construction (MOC) is given for product contact parts only.

Permanent loctite 270 threadlocker applied.

Removable loctite 222 threadlocker applied.

F.L. TRM ASSY. 6/7

GAP ADJUSTMENT ASSY. ATRM00900

ASSY.NO.	PART NO.	DESCRIPTION	QTY.	MATERIAL
	ATRM00900	ARM ASSEMBLY	2	*
	TRM01800	KEY C (CAM)	4	*
	TRM01900	CAM GEAR SIDE	2	*
	TRM02000	CAM BELT SIDE	2	*
	TRM02200	COMPRESSION SPRING CAM END	2	*
	TRM02300	MACHINE WASHER CAM END	2	*
	TRM02900	GAP ADJUSTMENT KNOB	2	*
	MFS0186	GRUB SCREW (CAM GEAR SIDE & CAM BELT SIDE)	4	*
	MFS0119	ALLEN HD. SCREW (GAP SETTING ROD)	2	*
	MFS0188	GRUB SCREW (GAP SETTING KNOB)	2	*
	MFS0063	ALLEN HD. SCREW (FOLLOWER ARM)	6	*

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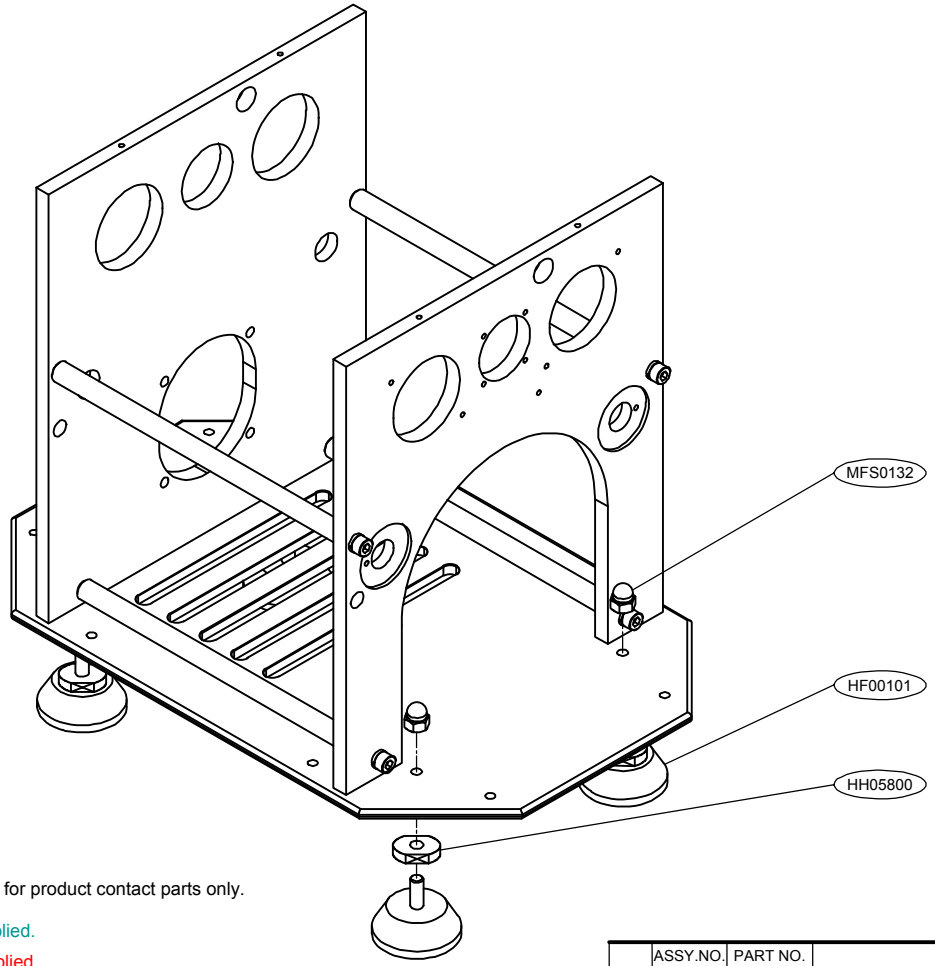
FagronLab TRM	BASE FRAME ASSY.	DWG. NO.8



* Material of construction (MOC) is given for product contact parts only.

Permanent loctite 270 threadlocker applied.

Removable loctite 222 threadlocker applied.

F.L. TRM ASSY. 7/7	ASSY.NO.	PART NO.	DESCRIPTION	QTY.	MATERIAL
BASE FRAME ASSY. ATRM01000		HF00101	RUBBER FOOT	4	*
		HH05800	SPACER FOR RUBBER FOOT	4	*
		MFS0132	DOME NUT M6	4	*

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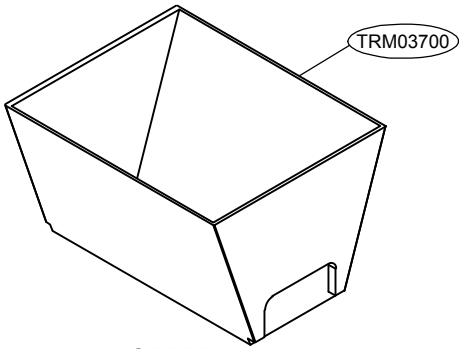
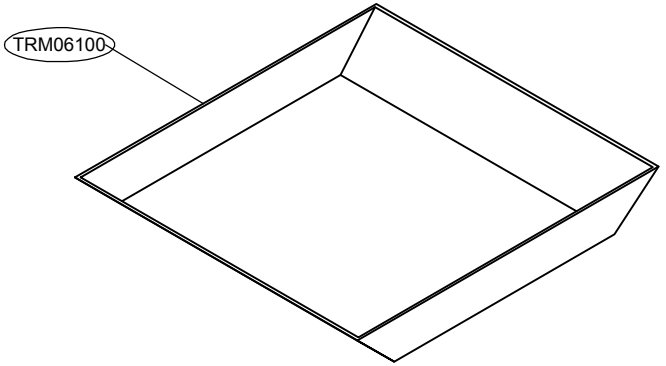
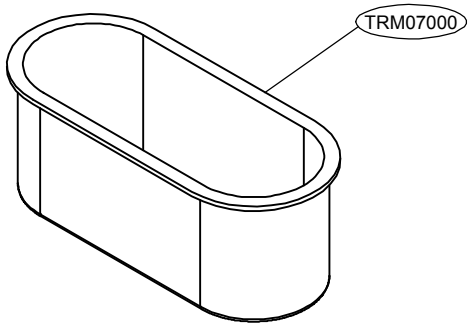
FagronLab TRM	STANDARD ACCESSORIES	DWG. NO.9



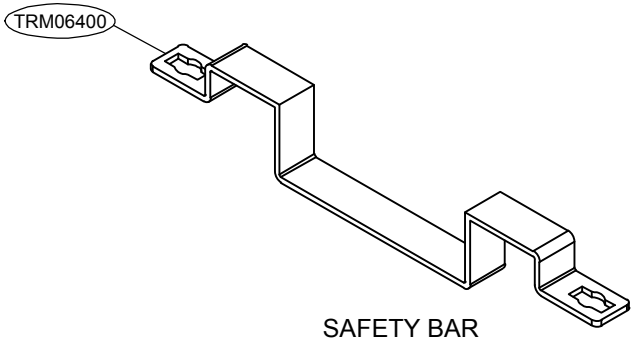
HOPPER



SPLASH TRAY



PRODUCT TRAY



SAFETY BAR

* Material of construction (MOC) is given for product contact parts only.

Permanent loctite 270 threadlocker applied.

Removable loctite 222 threadlocker applied.

PART NO.	DESCRIPTION	QTY.	MATERIAL
TRM03700	HOPPER	1	Al
TRM06100	SPLASH TRAY	1	Al
TRM07000	PRODUCT TRAY	1	Al
TRM06400	SAFETY BAR	1	SS

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CE Declaration of Conformity

Custom Capsules Pvt. Ltd.

Works : B-8/1, MIDC, Tarapur, Camlin Naka, Dist. Palghar, Maharashtra, Pin-401 506. India
Phone : 02525 - 272538 Fax No. : 02525 - 272357

DECLARATION OF CONFORMITY

Product Name	: Three Roll Mill
Model	: FagronLab™ Mill
Manufacturer	: Custom Capsules Pvt. Ltd. B 8/1 Camlin naka, Tarapur MIDC, Boisar, Dist: Thane, Maharashtra, India, 401506
Contact Person	: A.H. Varma Email : ahv@customcapsules.com Phone : + 91-2525-272538 Fax : + 91-2525-272537

It is hereby confirmed that the above product complies with the applicable requirements set out in the following directives.

2006/42/EC	: Machinery directive
2014/35/EU	: Low voltage directive
2014/30/EU	: EMC directive

The harmonized standards applied are as follows.

EN ISO 12100:2010	: Safety of machinery. General principles for design. Risk assessment and risk reduction
EN 60204-1:2006 + A1:2009	: Safety of machinery. Electrical equipment of machines. General requirements.
EN 61326-1:2013	: Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements.

The above declaration is made with the following assumptions.

1. The machine is properly installed.
2. Proper care has been taken of all safety considerations.

We confirm the correctness of all the information mentioned above.

CE

Signed

Place: MIDC Tarapur, India
Date:

CIN No.: U24235MH1988PTC048924
Regd. Office : Dalamal House, 1001, 10th Floor, Nariman Point, Mumbai - 400 021.
Tel. No. : 2287 2557 / 2287 2558 Fax No. : 022 - 2287 2560.

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Warranty and Contact Information

Warranty:

This product has a one year warranty on parts against manufacturing defects. On-site service is not included. Problems due to accidental damage or use other than as described in this manual are not covered.

Please include Serial Number with all correspondence

CE

Product Name	Three Roll Mill
Model	FagronLab™ Mill
Voltage	
Frequency	
Phase	Single
Watt	200 W
Year of Manufacture	
Serial Number	

Manufactured by Custom Capsules Pvt. Ltd.
Made in India With Care

Technical Support or to Order Change Parts, Spare Parts, Accessories

Distributed By:

fagron.gr

Fagron Hellas - 12 km N.R. Trikala-Larissa - P.C. 42100 Trikala
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Manufactured By:

Custom Capsules Pvt. Ltd.
For FagronLab

Made In India With Care