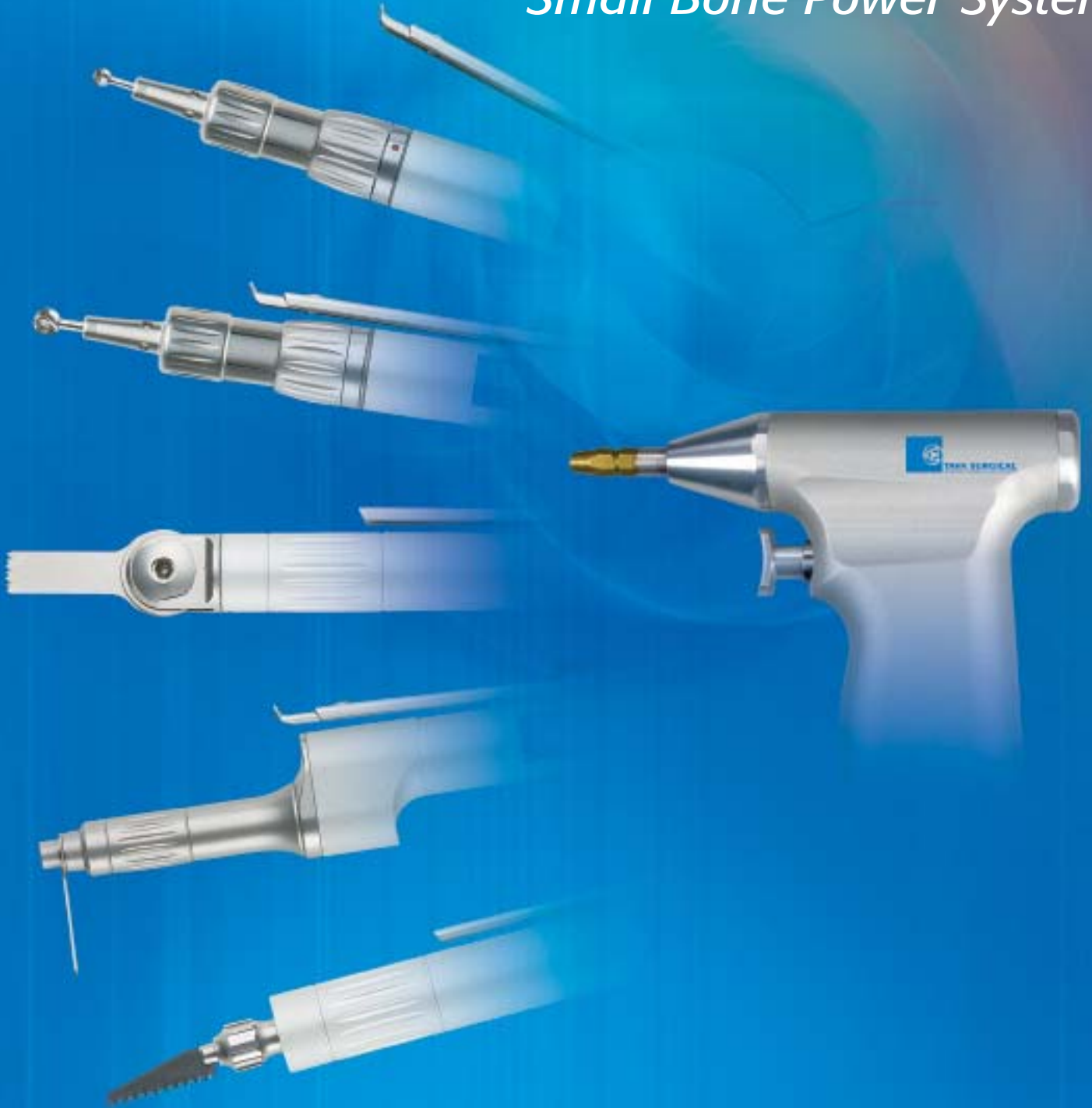


Pneumicro™

Small Bone Power System



Operating Instructions



TAVA SURGICAL
SURGICAL POWER & ACCESSORIES



Thank you for choosing Tava Surgical as supplier of your small bone powered surgical instrument and accessory needs.

The information and procedures described in this manual are intended to assist healthcare professionals in the use, care, cleaning, sterilization and long-term maintenance of Tava Surgical PneuMicro™ Small Bone Power System.

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Tava Surgical offers a complete line of PneuMicro consumables/disposables (burs, saw blades/rasps, K-wires, Steinman pins and twist drills).

- **Only medical professionals who are thoroughly familiar with the instrument's function, application and instructions for use should operate any Tava Surgical powered surgical instrument.**

- Tava Surgical PneuMicro™ instruments/handpieces are recommended to be powered by medical grade air or nitrogen (dry - 99.7% pure and filtered to five (5) microns).
- Always use the recommended operating pressure and verify it at the regulator pressure gauge. The recommended operating pressure setting for optimum performance is 90 - 110 psi (6.2 - 7.6 kg/cm²). Lower settings can be used for slower speed requirements, if necessary. Do not exceed 110 psi (7.6 kg/cm²) operating pressure for PneuMicro™ instruments.

Note: For optimum performance, when using an air/nitrogen hose longer than 10 feet (3 m), increase pressure by 1 psi for each additional 1-foot length of hose.

- Use of eye, face protection device(s) recommended while operating powered instruments.
- When instrument is connected to supply source and not being used or loading consumables/disposables (burs, saw blades/rasps, K-wires, Steinman pins and twist drills) into the instrument, the throttle/trigger must be in the SAFE position to avoid unintended activation of the instrument.
- Application of excessive force to instrument may cause damage to instrument and/or consumable or injury to patient and/or operator.
- For optimum results, use new consumable for every procedure.
- Check consumables for damage before and during use. If consumable seems to be damaged, discontinue its use.
- Test the instrument before each use. With face protected and appropriate consumable fully inserted and locked into the instrument, activate the handpiece for 5 - 10 seconds. Check for rapid temperature rise, unusual noise(s) and other visible malfunctions.
- Never use a malfunctioning, damaged or suspected-to-be-damaged instrument. Return it to Tava Surgical for prompt service.
- Do not drop, throw or hit instrument against any surface.
- Do not immerse instrument. Never clean a powered instrument in an automated disinfecting washer or an ultrasonic cleaner.
- Do not start a surgical procedure if the nitrogen tank pressure is less than 500 psi (35 kg/cm²).
- Do not pinch, clamp or crimp air/nitrogen supply hose.
- To assure safety and optimum results, use only Tava Surgical instruments, attachments, accessories, and consumables.
- Do not lubricate powered surgical instruments.

Operating Instructions

High Speed Drill PM-M09 Series



TECHNICAL DESCRIPTION:

- Speed: 0 - 95,000 rpm
- Torque: 1.75 in-oz (1.24 N-cm)
- Operating Pressure: 90 - 110 psi (6.2 - 7.6 kg/cm²)

The **PneuMicro™ PM-M09 Series High Speed Drill** operates at throttle controlled speeds with ample power for cutting and sculpting small bone and enamel. The compact and lightweight design allows access to the smallest of surgical sites.

The bur collet accepts a wide range of medium, long and extra long burs with shank diameters of .0919 in to .0929 in (2.33 to 2.36 mm). Bur guards are available and must be used with medium, long and extra long burs (**See page 4/Figure 4**).

Operating Procedure

When instrument is not in use but connected to medical grade air or nitrogen supply, the throttle safety slide must be placed in the SAFE position (fully forward) to avoid accidental activation of instrument (**Figure 1**).

1. **Safety On:** Move the throttle safety slide to the SAFE position (fully forward).
2. **System Set Up:** Connect the instrument to the air/nitrogen supply hose (Tava Surgical catalog #A90 Series Hoses). Confirm by checking the regulator pressure gauge that operating pressure does not exceed 110 psi (7.6 kg/cm²). Move throttle safety slide to the ON position (fully backward) to activate instrument (**Figure 2**). Your PneuMicro™ High Speed Drill is ready for use.
3. **Open Collet:** Unlock the bur locking mechanism by rotating the locking collar into the "open" position (a click can be felt as the collet fully opens).
4. **Bur Guard Use:** In general the bur head should extend no more than 1 in (2.5 cm) from the end of the bur guard. Select the proper bur guard for length of the bur to be used (**See pg. 4 / Figure 4**) (for medium burs Tava Surgical catalog #PM-M10-901, for long burs Tava Surgical catalog #PM-M10-902, for extra long burs Tava Surgical catalog #PM-M10-903). Fully seat the bur guard onto nose of drill (**Figure 3**).

Note: Do not use burs without bur guard.

5. **Insert Bur:** Insert the bur into the bur guard and seat it fully into the locking mechanism. The fully inserted bur should not extend more than 1 in (2.5 cm) from the tip of the bur guard.



Bur Guard Installation



CAUTION:
THE PNEUMICRO™ PM-M09 SERIES HIGH SPEED DRILL MAY HEAT UP RAPIDLY IF THE LOCKING COLLAR IS NOT FULLY ROTATED INTO THE "LOCK" POSITION. EXCESSIVE HEAT MAY RESULT IN DAMAGE TO INSTRUMENT OR INJURY TO THE PATIENT AND OR OPERATOR.

6. **Lock Bur:** Rotate the locking collar into the "Lock" position (a click can be felt when fully secure). Tug slightly on bur to ensure it is fully locked in place.

Note: The PneuMicro™ PM-M09 series High Speed Drill will not operate unless a bur is fully inserted and the locking collar is in the locked position.

The speed of the instrument is controlled by the throttle lever and will depend on the operating air or nitrogen pressure. Do not exceed the recommended maximum operating pressure of 110 psi (7.6 kg/cm²). Lower pressure setting will achieve lower maximum speed.

Sudden activation of the instrument throttle lever will start the instrument immediately at high speed. For this reason a careful, slow activation of the throttle lever is recommended. By correct application of the throttle lever, various operating speeds can be achieved.



Operating Instructions

Medium Speed Drill PM-M10 Series



TECHNICAL DESCRIPTION:

- Speed: 0 - 25,000 rpm
- Torque: 6.0 in-oz (4.24 N-cm)
- Operating Pressure: 90 - 110 psi (6.2 - 7.6 kg/cm²)

The **PneuMicro™ PM-M10 Series Medium Speed Drill** operates at throttle controlled speeds with ample power for small bone cutting, drilling, sculpting, and intramedullary canal reaming. The compact and lightweight design allows access to the smallest of surgical sites.

The bur collet accepts a wide range of medium, long and extra long burs, as well as drill bits with shank diameters of .0919 in to .0929 in (2.33 to 2.36 mm). Bur guards are available and must be used with medium, long and extra long burs (**Figure 4**).

Operating Procedure

When instrument is not in use but connected to medical grade air/nitrogen supply, the throttle safety slide must be placed in the **SAFE** position (fully forward) to avoid accidental activation of instrument (**See pg. 3 / Figure 1**).

1. **Safety On:** Move the throttle safety slide to the **SAFE** position (fully forward).
2. **System Set Up:** Connect the instrument to the air/nitrogen supply hose (Tava Surgical catalog #A90 Series Hoses). Confirm by checking the regulator pressure gauge that operating pressure does not exceed 110 psi (7.6 kg/cm²). Move throttle safety slide to the **ON** position (fully backward) to activate instrument (**See pg. 3 / Figure 2**). Your PneuMicro™ Medium Speed Drill is ready for use.
3. **Open Collet:** Unlock the bur locking mechanism by rotating the locking collar into the "open" position (a click can be felt as the collet fully opens).
4. **Bur Guard Use:** In general the bur head should extend no more than 1 in (2.5 cm) from the end of the bur guard. Select the proper bur guard for length of the bur to be used (**Figure 4**) (for medium burs Tava Surgical catalog #PM-M10-901, for long burs Tava Surgical catalog #PM-M10-902, for extra long burs Tava Surgical catalog #PM-M10-903). Fully seat the bur guard onto nose of drill (**See pg. 3 / Figure 3**).
5. **Insert Bur:** Insert the bur into the bur guard and seat it fully into the locking mechanism. The fully inserted bur should not extend more than 1 in (2.5 cm) from the tip of the bur guard.

Note: Do not use burs without bur guard.

6. **Lock Bur:** Rotate the locking collar into the "Lock" position (a click can be felt when fully secure). Tug slightly on bur to ensure it is fully locked in place.

Note: The PneuMicro™ PM-M10 series Medium Speed Drill will not operate unless a bur is fully inserted and the locking collar is in the locked position.

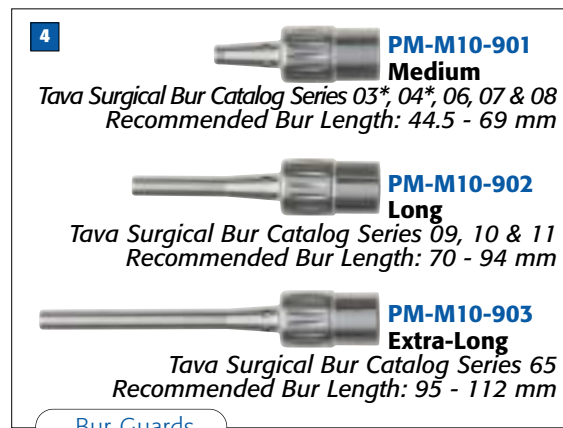


CAUTION:

THE PNEUMICRO™ PM-M10 SERIES MEDIUM SPEED DRILL MAY HEAT UP RAPIDLY IF THE LOCKING COLLAR IS NOT FULLY ROTATED INTO THE "LOCK" POSITION. EXCESSIVE HEAT MAY RESULT IN DAMAGE TO INSTRUMENT OR INJURY TO THE PATIENT AND OR OPERATOR.

The speed of the instrument is controlled by the throttle lever and will depend on the operating air or nitrogen pressure. Do not exceed the recommended maximum operating pressure of 110 psi (7.6 kg/cm²). Lower pressure setting will achieve lower maximum speed.

Sudden activation of the instrument throttle lever will start the instrument immediately at high speed. For this reason a careful, slow activation of the throttle lever is recommended. By correct application of the throttle lever, various operating speeds can be achieved.



**Do not use the following Tava Surgical Dermabrader Burs in the PM-M09 Series High Speed Drill: 03-D1901, 03-D1902, 04-D1093 and 04-D2001.*



Operating Instructions

Wiredriver PM-M11 Series

TECHNICAL DESCRIPTION:

- Speed: 0 - 2,100 rpm
- Torque: 45 in-oz (31.8 N-cm)
- Operating Pressure: 90 - 110 psi (6.2 - 7.6 kg/cm²)
- Wire/Pin Diameter Range: 0.028 - 0.078 in (0.7 - 2.0 mm)

The **PneuMicro™ PM-M11 Series Wiredriver**, with its ergonomically designed pistol-grip handle, operates at throttle controlled speeds with ample power for small bone fixation. The compact and lightweight design allows access to the smallest of surgical sites.

The Wiredriver collet accepts both smooth/plain and threaded K-Wires and Steinman Pins in a wide range of diameter sizes.

Note: Tava Surgical K-Wire Catalog Series KM172 & 173; Tava Surgical Steinmann Pin Catalog Series KM168 & KM169

Operating Procedure

When instrument is not in use but connected to medical grade air or nitrogen supply, the activation/directional lever must be placed in the **SAFE** position (center) to avoid accidental activation of instrument (**Figure 5**).

- 1. Safety On:** Move the activation/directional lever to the **SAFE** position (center).
- 2. System Set Up:** Connect the instrument to the air/nitrogen supply hose (Tava Surgical catalog #A90 Series Hoses). Confirm by checking the regulator pressure gauge that operating pressure does not exceed 110 psi (7.6 kg/cm²). Assure the activation/directional lever on the handpiece is in the **SAFE** position. Your PneuMicro™ Wiredriver is ready for use.
- 3. Insert Wire:** Insert the wire (six inches or longer) either through the front or back of the cannulated handpiece (**Figure 6**). If inserting a wire through the front of the wiredriver, care must be taken to align the wire with the collet opening to avoid jamming in the collet. Wires shorter than six inches must be loaded through the front of the handpiece. Insert the wire until the desired length is protruding from the collet/nose of the handpiece. The inserted wire should protrude approximately 1 in (2.5 cm) from the tip of the collet/nose (**Figure 7**). The cannulated wire guard (Tava Surgical catalog #PM-M11-201) may be used to prevent bending of longer wires. Attach the wire guard by threading the guard into the back of the handpiece (**See pg. 6 / Figure 8**).



Inserting Wire



Inserted Wire



Operating Instructions

Wiredriver PM-M11 Series



- 4. Clamp Wire:** Slightly depress the trigger to lock the collet onto the wire.
- 5. Drive Wire:** To advance the wire, the collet end of the handpiece should be at least 1/4 to 1/2 in (6 to 13 mm) away from the bone. Place the activation/directional lever in the desired position (FORWARD or REVERSE) and depress the trigger. To expose more wire, completely release the trigger and pull the handpiece back along the wire. Slightly depress the trigger again to lock the collet. Depress the trigger to activate the handpiece for further insertion of the wire.

Note: The handpiece must be in the REVERSE position to remove threaded wires and pins.

Instrument Speed: The variable speed of the instrument is controlled by the instrument trigger and depends on the operating air or nitrogen pressure. Do not exceed the recommended maximum operating pressure of 110 psi (7.6 kg/cm²).

If the handpiece lever is in FORWARD or REVERSE position, the instrument will start at maximum speed if the trigger is depressed fully. A slow activation of the instrument trigger is recommended.



Attaching Wire Guard



PM-M11-201*
Wire Guard

PM-M11-202*
Wire Brush

**Included with handpiece or can be purchased separately*

Wiredriver Accessories



Operating Instructions

Sagittal Saw PM-M12 Series



TECHNICAL DESCRIPTION:

- Speed: 0 - 18,000 cpm
- Blade Travel: 4° arc
- Operating Pressure: 90 - 110 psi (6.2 - 7.6 kg/cm²)

The **PneuMicro™ PM-M12 Series Sagittal Saw** has the power and precision needed for cutting both wedge and transverse osteotomies while allowing excellent visibility to the surgical site. Smooth cutting and easy to control, the instrument's saw blade may be positioned anywhere within a 180° arc.

The saw blade collet accepts a wide variety of .010 in (.25 mm) and .025 in (0.6 mm) thick Tava Surgical straight and angled sagittal saw blades/diamond abradors.

Note: Brasseler USA Sagittal Saw Blade Catalog Series KM-3100, KM-3200, KM-3400 and Sagittal Diamond Abraders KM-3055, KM-3056 and KM-3057

Operating Procedure

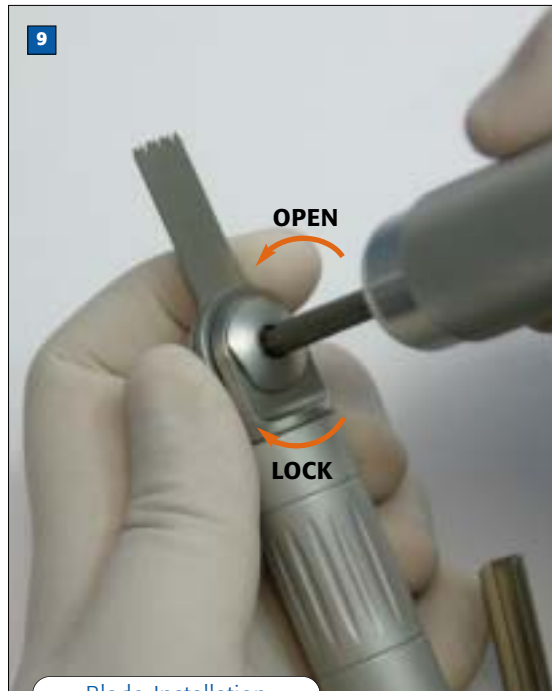
When instrument is not in use but connected to medical grade air or nitrogen supply, the throttle safety slide must be placed in the SAFE position (fully forward) to avoid accidental activation of instrument (See pg. 3 / Figure 1).

- 1. Safety On:** Move the throttle safety slide to the SAFE position (fully forward).
- 2. System Set Up:** Connect the instrument to the air/nitrogen supply hose (Tava Surgical catalog #A90 Series Hoses). Confirm by checking the regulator pressure gauge, that operating pressure does not exceed 110 psi (7.6 kg/cm²). Move throttle safety slide to the ON position (fully backward) to activate instrument (See pg. 3 / Figure 2). Your PneuMicro™ Sagittal Saw is ready for use.
- 3. Open Collet:** Open/loosen the blade locking screw with the blade wrench (Tava Surgical catalog #PM-M12-001) by turning it counterclockwise (Figure 9).

- 4. Insert Saw Blade/Abrader:** Insert the saw blade/abrader between the two washers, forming a slot. The saw blade/abrader must be fully inserted for proper engagement. Lock/tighten the blade locking screw hand-tight with the blade wrench by turning it clockwise (Figure 9). The saw blade/abrader may be positional anywhere within a 180° arc. Confirm that the saw blade/abrader is secure by tugging slightly. Activate the instrument briefly, and then re-tighten the blade locking screw to ensure saw blade/abrader is fully locked in place.

The speed of the instrument is controlled by the throttle lever and will depend on the operating air or nitrogen pressure. Do not exceed the recommended maximum operating pressure of 110 psi (7.6 kg/cm²). Lower pressure setting will achieve lower maximum speed.

Sudden activation of the instrument throttle lever will start the instrument immediately at high speed. For this reason a careful, slow activation of the throttle lever is recommended. By correct application of the throttle lever, various operating speeds can be achieved.



Blade Installation

PM-M12-001*

**Included with handpiece or can be purchased separately*

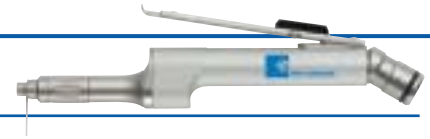


Blade Wrench



Operating Instructions

Oscillating Saw PM-M13 Series



TECHNICAL DESCRIPTION:

- Speed: 0 - 22,000 cpm
- Blade Travel: 7° arc
- Operating Pressure: 90 - 110 psi (6.2 - 7.6 kg/cm²)

The **PneuMicro™ PM-M13 Series Oscillating Saw** has a long, narrow nose design for accessing restricted areas and to provide excellent visibility of the surgical site. The saw delivers the power necessary for accurate cutting of both curved and straight osteotomies. The instrument's saw blade may be positioned anywhere within a 180° arc.

The saw blade collet accepts a wide selection of the Tava Surgical straight and angle-shaped oscillating saw blades.

Operating Procedure

Note: Tava Surgical Oscillating Saw Blade Catalog Series KM-3000

When instrument is not in use but connected to medical grade air or nitrogen supply, the throttle safety slide must be placed in the SAFE position (fully forward) to avoid accidental activation of instrument (See pg. 3 / Figure 1).

- 1. Safety On:** Move the throttle safety slide to the SAFE position (fully forward).
- 2. System Set Up:** Connect the instrument to the air/nitrogen supply hose (Tava Surgical catalog #A90 Series Hoses). Confirm by checking the regulator pressure gauge that operating pressure does not exceed 110 psi (7.6 kg/cm²). Move throttle safety slide to the ON position (fully backward) to activate instrument (See pg. 3 / Figure 2). Your PneuMicro™ Oscillating saw is ready for use.
- 3. Open Collet:** Open/loosen the blade locking screw with the blade wrench (Tava Surgical catalog #PM-M12-001) by turning it counterclockwise (Figure 10).

- 4. Insert Saw Blade:** Insert the saw blade under the compression washer. The saw blade must be fully inserted for proper engagement. Lock/tighten the blade locking screw hand-tight with the blade wrench by turning it clockwise (Figure 10). The saw blade may be positioned anywhere within a 180° arc. Confirm that the saw blade is secure by tugging slightly on the saw blade. Activate the instrument briefly, and then re-tighten the blade locking screw to ensure that the saw blade is fully locked in place.

The speed of the instrument is controlled by the throttle lever and will depend on the operating air or nitrogen pressure. Do not exceed the recommended maximum operating pressure of 110 psi (7.6 kg/cm²). Lower pressure setting will achieve lower maximum speed.

Sudden activation of the instrument throttle lever will start the instrument immediately at high speed. For this reason a careful, slow activation of the throttle lever is recommended. By correct application of the throttle lever, various operating speeds can be achieved.



Blade Installation

PM-M12-001*

**Included with handpiece or can be purchased separately*



Blade Wrench



Operating Instructions

Reciprocating Saw PM-M14 Series



TECHNICAL DESCRIPTION:

- Speed: 0 - 18,000 rpm
- Blade Travel: .078 in (2.0 mm)
- Operating Pressure: 90 - 110 psi (6.2 - 7.6 kg/cm²)

The **PneuMicro™ PM-M14 Series Reciprocating Saw** is an extremely versatile instrument and an outstanding performer for creating long osteotomies on the foot or oral/maxillofacial operations.

The sawblade/rasp collet accepts flat shank saw blades from .014 in to .020 in (.35 mm to .51 mm) thick, as well as rasps and round shank saw blades with standard diameters of .125 in (3.18 mm).

Note: Tava Surgical Reciprocating Saw Blade/Rasp Catalog KM-50 Series, KM-80 Series and KM-060 & KM-070

Operating Procedure

When instrument is not in use but connected to medical grade air or nitrogen supply, the throttle safety slide must be placed in the **SAFE** position (fully forward) to avoid accidental activation of instrument (See pg. 3 / Figure 1).

- 1. Safety On:** Move the throttle safety slide to **SAFE** position (fully forward).
- 2. System Set Up:** Connect the instrument to the air/nitrogen supply hose (Tava Surgical catalog #A90 Series Hoses). Confirm by checking the regulator pressure gauge that operating pressure does not exceed 110 psi (7.6 kg/cm²). Move throttle safety slide to the **ON** position (fully backward) to activate the instrument (See pg. 3 / Figure 2). Your PneuMicro™ Reciprocating Saw is ready for use.
- 3. Open Collet:** Open/loosen the blade/rasp locking nut by turning it counterclockwise (Figure 11). Do not remove the locking nut from the tip.
- 4. Insert Saw Blade/Rasp:** Insert the saw blade/rasp fully into the locking mechanism. The saw blade/rasp must be fully inserted for proper engagement. Lock/tighten the blade/rasp locking nut finger-tight by turning it clockwise (Figure 11). Confirm that the saw blade/rasp is secure by tugging slightly on the saw blade/rasp. Activate the instrument briefly, and then re-tighten the blade/rasp locking nut to ensure saw blade/rasp is fully locked in place.

The speed of the instrument is controlled by the throttle lever and will depend on the operating air or nitrogen pressure. Do not exceed the recommended maximum operating pressure of 110 psi (7.6 kg/cm²). Lower pressure setting will achieve lower maximum speed.

Sudden activation of the instrument throttle lever will start the instrument immediately at high speed. For this reason a careful, slow activation of the throttle lever is recommended. By correct application of the throttle lever, various operating speeds can be achieved.



Blade Installation



Air/Nitrogen Hose A90 Series Hoses



Connecting Hose to Instrument

Operating Procedure

- 1. Supply Side Connection:** Connect the male Schrader connector on the end of hose by pushing it into the female Schrader connector fitting of the regulator or the regulated air/nitrogen source.

Note: A DISS to Schrader Adapter (Tava Surgical Catalog #MI-121-001) is available when a female DISS connector is required at the regulator or the regulated air or nitrogen supply source.

Insert the male Schrader connector on the air/nitrogen hose (Tava Surgical Catalog #A90 Series Hoses) into the female Schrader connector on the Adapter, and then attach the female DISS connector on the Adapter to the male DISS connector at the regulator or regulated air or nitrogen source.

- 2. Connecting Instrument:** Hold securely in one hand the hose connector end of the instrument. Hold firmly in the other hand the connector of the hose and align the pins on the connector with the bayonet slots in the hose connector of the instrument (**Figure 12**). Push both together and twist the connector so the pins slide into the bayonet slots and seat in the detents for positive locking. Release hose, it will stay attached to the instrument if connection is correct.

- 3. Operation:** Turn on supply valve and adjust operating pressure from 90 to 110 psi (6.2 to 7.6 kg/cm²). The hose is operational at this time.

Note: For optimum performance, when using a hose longer than 10 feet (3 m), increase pressure by 1 psi for each additional 1-foot length of hose.

- 4. Disconnecting Hose From Supply Source:** Release the hose from the supply source by firmly holding the hose connector, and then twist the supply source Schrader connector sleeve.

Note: To prevent sudden ejection of hose from the supply source, hold the hose connector firmly.

- 5. Disconnecting Hose From the Instrument:** Hold instrument hose connector end and connector on hose firmly and push them slightly together to remove the pins from the detents of the bayonet slots. After twisting the hose connector, slowly move it away from the instrument.

Operating Instructions

Cleaning Procedure

Leave air/nitrogen hose attached or insert the cleaning cap into the hose connector of the instrument. Remove attachments (bur guards), accessory (wire guard) and consumables/disposables (burs, saw blades/rasps, K-wires, Steinman pins and twist drills) prior to cleaning.

1. Scrub, using a nylon brush, the instruments, attachments (bur guards) and accessories thoroughly with mild soap and water. Remove all traces of blood and debris.
2. **Wiredriver Cannulation Cleaning** - Insert the Wire Brush (Tava Surgical catalog #PM-M11-202) through the back of handpiece (**Figure 13**). Pull the brush through the handpiece. Repeat the process until all debris is removed.

Note: The cannulation of both the Wiredriver and Wire Guard must be cleaned after each use to ensure proper functioning of the Wiredriver.

3. With the air/nitrogen hose or cleaning cap still attached, rinse all traces of contaminants and detergent under running water.

DO NOT IMMERSE. If accidental immersion of the handpiece occurs please refer to section: Accidental Immersion.



4. Disconnect the air/nitrogen hose or remove the cleaning cap. Shake the instrument and any attachment free of excess water.

Note: The PM-M09 and PM-M10 series drills cannot be operated without inserting proper bur guard and locking a bur into the collet.

5. **Drills and Saws** - Move throttle control safety slide to SAFE (full forward) position (**See pg. 3 / Figure 1**). Connect air/nitrogen hose to medical grade air or nitrogen supply (regulated to 90 - 110 psi or 6.2 - 7.6 kg/cm²). Move throttle safety slide to ON position (full backward), activate instrument for 5 - 10 seconds (**See pg. 3 / Figure 2**). Check for rapid temperature rise, unusual noise(s) and other visible malfunctions.

6. **Wiredriver** - Move lever to SAFE (center) position (**See pg. 5 / Figure 5**). Connect air/nitrogen hose to medical grade air or nitrogen supply (regulated to 90 - 110 psi or 6.2 - 7.6 kg/cm²). Move lever to FORWARD position (left), activate instrument for 5 - 10 seconds. Repeat with lever in REVERSE.
8. Move throttle/lever to the SAFE position, and disconnect air/nitrogen hose from instrument.
9. Do not lubricate instruments.

Note: Remove attachments (bur guard) and accessories (air/nitrogen hose or cleaning cap) prior to sterilization.



Operating Instructions

Accidental Immersion

If accidental immersion of the handpiece occurs, please follow these recommended procedures:

1. Immediately wash, rinse instrument under running water.
2. Immerse instrument in clean rinse water (preferably de-ionized or distilled) for 1 - 3 minutes. The goal is to rinse away any corrosive fluids and precipitates.
3. Attach the instrument to medical grade air or nitrogen (see #5 in cleaning procedure) and operate the instrument for a minimum of 30 seconds.

Recommended Sterilization* Procedures



Steam sterilization has been found both safe and effective for the sterilization of Brasseler USA PneuMicro™ small bone powered instruments and air/nitrogen hoses. The instruments are capable of withstanding the recommended exposure times and temperatures of steam sterilization.

Do not sterilize instruments or air/nitrogen hoses in: Ethylene Oxide, Sterrad® System, Steris® System or comparable systems. Do not use Cidex® to sterilize instruments or hoses. Do not place instruments in a peel pouch for sterilization.

- Air/nitrogen hose or cleaning cap must be removed from instrument.
- If instruments require being wrapped, two double thick #140 thread count wrappers (or equivalent) should be utilized.

Note: The sterilizer manufacturer's written instruction for cycle parameters, load configuration and AAMI guidelines for steam sterilization should be followed.

*The following parameters are provided as guidelines and do not guarantee that the devices are sterile. Sterility assurance validation is the responsibility of your institution.

Parameters for sterilizing PneuMicro handpiece in Sterilization Case**

Steam Sterilization	Recommended Temperature	Recommended Minimum Exposure Time	Recommended Minimum Dry Time
Pre-Vacuum	270° - 279°F 132° - 137°C	4 minutes	8 minutes
	273° - 279°F 134° - 137°C	3 minutes	8 minutes

**Sterilization case (Brasseler USA catalog #PM-A95-000) has been validated to sterilize up to three PneuMicro Handpieces, three bur guards, one blade wrench, one wire guard and one air/nitrogen hose.

Parameters for sterilizing individually wrapped PneuMicro™ products including handpieces, attachments and accessories .

Steam Sterilization	Recommended Temperature	Recommended Minimum Exposure Time	Recommended Minimum Dry Time
Gravity	270° - 279°F 132° - 137°C	35 minutes	8 minutes
Pre-Vacuum	270° - 279°F 132° - 137°C	4 minutes	8 minutes
	273° - 279°F 134° - 137°C	3 minutes	8 minutes

Sterrad, Steris and Cidex are not register trademarks of Brasseler USA.



Operating Instructions

Trouble Shooting

Symptom	Potential Cause	Solution
All Handpieces		
Handpiece lacks power or does not operate.	<ul style="list-style-type: none"> ■ Internal Malfunction. ■ Incorrect operating pressure. ■ Tank pressure low - below 500 psi. ■ Throttle safety slide/directional lever is partially in safe position. ■ Hose not installed properly. ■ Tank valve not opened fully. ■ Regulator malfunction. ■ Hose pinched. 	<ul style="list-style-type: none"> ■ Return handpiece for service. ■ Set pressure to correct operating pressure for length of hose - <i>See instructions on page 2.</i> ■ Replace tank before using handpieces. ■ Ensure throttle safety slide/directional lever is in operating position. ■ Check all hose connections for proper installation. ■ Completely open tank valve. ■ Replace regulator and retest handpiece. If symptom continues return handpiece for service. ■ Inspect hose and remove restriction.
Drills		
Bur is not retained in handpiece.	<ul style="list-style-type: none"> ■ Bur is not locked in handpiece. ■ Bur is not fully inserted into collet. ■ Wrong style bur. 	<ul style="list-style-type: none"> ■ Ensure locking ring is in the lock position. ■ Insert bur completely into collet and lock collet - <i>See instructions on pages 5 & 6.</i> ■ Check manufacturer's recommended bur guards and speeds for handpiece being used.
Handpiece overheats.	<ul style="list-style-type: none"> ■ Bur guard bearings worn. ■ Collet not fully closed. ■ Internal malfunction. ■ Incorrect operating pressure. ■ No bur in collet. 	<ul style="list-style-type: none"> ■ Return bur guard for service. ■ Ensure locking ring is in the lock position. ■ Return handpiece for service. ■ Set pressure to correct operating pressure for length of hose - <i>See instructions on page 2.</i> ■ Install proper bur and proper bur guard.
Saws		
Blade vibrates loose.	<ul style="list-style-type: none"> ■ Blade is not fully seated. ■ Blade is not locked in collet. ■ Blade locking nut is worn. ■ Wrench is worn. 	<ul style="list-style-type: none"> ■ Ensure blade is fully secured in handpiece collet. ■ Briefly activate the handpiece and retighten blade locking nut ■ Return handpiece for service. ■ Replace.
Wiredriver		
Wire will not insert into collet.	<ul style="list-style-type: none"> ■ Wire not in size range of collet. ■ Debris in collet. 	<ul style="list-style-type: none"> ■ Check size to ensure it is between .028 in and .078 in. ■ Clean collet using wire brush.

Warranty

Tava Surgical Surgical Power & Accessories warrants all PneuMicro™ instruments/handpieces to be free from defects in material and workmanship for a period of one (1) year from the original purchase date. The Tava Surgical PneuMicro attachments (bur guards) and accessories (hoses, cleaning cap, foot control, sterilization cases, adapter - DISS to Schrader, wire guard, wire brush and blade wrench) are warranted for six (6) months from the original purchase

date. The warranty is limited to the repair of the product without charge. This warranty is void in the event of any of the following: abuse, misuse or use in other than normal surgery environment, disassembly, alteration or unauthorized repair, or in the event that the product has not been used in reasonable manner and in compliance with the written instructions furnished by Tava Surgical Surgical Instruments.



Operating Instructions

Explanation of Symbols



Refer to the
Operation
Instructions Manual



DO NOT IMMERSE



Steam Sterilize

Repair Service

Tava Surgical recommends that all powered instruments/handpieces, attachments and accessories be returned for preventative maintenance every six (6) months.

Tava Surgical warrants any service or repair work performed will be free from defects in material or workmanship for the period of six (6) months from date of service or repair. This warranty applies to the actual work performed.

Products must be sterilized and decontaminated before returning.

Note: It is unlawful to ship contaminated non-sterilized products.

Contact a Customer Service Representative at Tava Surgical Headquarters at 800-569-6738 (ext.7050), 912-921-7575 or email us at customerservice@tavasurgical.com to report a repair and/or to obtain a loaner instrument if needed. Loaner instruments can be supplied, depending on availability of stock.

Please include the following information with the returned product(s) for repair:

- Model & Serial Number of Instrument
- Note customer name, address, and account number
- A packing list itemizing each product being returned
- Enclose brief statement describing reason for product repair

Return to:
Tava Surgical
Service Department
4837 McGrath Street, Suite J
Ventura, CA 93003

Return Goods Policy

Tava Surgical unconditionally guarantees the quality of each of our products, their performance and your satisfaction with those products.

If product needs to be returned, the following applies:

Consumable/Disposable Product:

Consumable product(s) returned for credit must be received within 90 days of purchase date and qualify for resale (prior to a credit being issued) or may be subject to an additional restocking fee.

Capital Equipment:

Capital equipment returned for credit must be received within 30 days of purchase date and qualify for resale (prior to a credit being issued) or may be subject to an additional restocking fee. Credit will be issued for incorrectly ordered product and incorrect product shipped. Capital equipment that has been used does not qualify for resale and credit will not be issued.

Packaging and Shipping:

Package items in original packaging, as credit cannot be issued for items damaged in return shipment due to packaging inadequacy.

Note: It is unlawful to ship contaminated non-sterilized products.

Contact a Customer Service Representative at Tava Surgical Headquarters at 800-569-6738 (ext.7050), 912-921-7575 or email us at customerservice@tavasurgical.com to obtain a "Return Merchandise Authorization" (RMA) number.

Please include the following information with the returned product(s):

- Model & Serial Number of Instrument
- Return Merchandise Authorization number noted with the return
- Note the "Original Invoice Number" or place a copy in the package
- Note customer name, address, and account number
- A packing list itemizing each product being returned
- Enclose brief statement describing reason for product return

Return to:
Tava Surgical
4837 McGrath Street, Suite J
Ventura, CA 93003



Operating Instructions

Product Ordering Information

CATALOG NUMBER

DESCRIPTION

HANDPIECES WITH LINVATEC® HALL® HOSE CONNECTION

PM-M09-200	High Speed Drill
PM-M10-200	Medium Speed Drill
PM-M11-200	Wiredriver with Guard & Brush
PM-M12-200	Sagittal Saw with Wrench
PM-M13-200	Oscillating Saw with Wrench
PM-M14-200	Reciprocating Saw

HANDPIECES WITH SYNTHES® HOSE CONNECTION

PM-M09-500	High Speed Drill
PM-M10-500	Medium Speed Drill
PM-M12-500	Sagittal Saw with Wrench
PM-M13-500	Oscillating Saw with Wrench
PM-M14-500	Reciprocating Saw

ATTACHMENTS

PM-M10-901	Bur Guard - <i>Medium</i>
PM-M10-902	Bur Guard - <i>Long</i>
PM-M10-903	Bur Guard - <i>Extra Long</i>

ACCESSORIES

A90-200	Air/Nitrogen Hose with Linvatec® Hall® Hose Connection - <i>10 Ft.</i>
A90-200-15	Air/Nitrogen Hose with Linvatec® Hall® Hose Connection - <i>15 Ft.</i>
A90-201	Cleaning Cap with Linvatec® Hall® Hose Connection
A91-000	Foot Control
A95-000	Sterilization Case - <i>Small (11 in x 7 in x 1 in)</i>
MI-121-001	Adapter - <i>DISS to Schrader</i>
PM-A90-501	Cleaning Cap with Synthes® Hose Connection
PM-A95-000	Sterilization Case - <i>Large (12 in x 7 in x 4 in)</i>
PM-M11-201	Wire Guard
PM-M11-202	Wire Brush
PM-M12-001	Blade Wrench

Tava Surgical offers a complete line of PneuMicro consumables/disposables (burs, saw blades/rasps, K-wires, Steinman pins and twist drills).





One Brasseler Boulevard ▪ Savannah, Georgia 31419
800-569-6738 Ext. 7050 or 912-921-7575 ▪ 912-921-7575 (fax)
www.TavaSurgical.com

Order/Information/ Customer Service — **USA & Canada**
1-800-569-6738 (Ext. 7050) or 1-912-921-7575

Fax: 912-921-7578



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