STEEL MACHINERY GROUP

SMG F610 Pneumatic Flange Facing Machine

(Facing Range: 2 – 24” (50 – 610mm)

Operations Manual



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Health & Safety at Work Act

This manual outlines the machine's functions, performance, operating procedures, and essential safety precautions. Please ensure the following points are fully understood before putting the machine into service:

- Read and understand this manual before operating the machine to ensure safe and correct use.
- Keep this manual accessible for quick reference at all times.
- Do not operate the machine without an air filter/lubricator fitted. Running the air motor dry will cause damage.
- Never attempt to change feed settings while the machine is rotating.
- Do not operate the machine until you fully understand its controls and operating procedures.
- To prevent injury to yourself or anyone nearby, always follow safe work practices.

Personal Safety Requirements:

- Do not wear loose-fitting clothing or jewellery.
- Tie back long hair or wear a suitable cap or hat.

Operation Instructions

Before operating this machine, please read the entire manual and check all items against the packing list. Ensure you understand the safety requirements, machine performance, and correct operating procedures.

1. Only trained operators are permitted to use this machine. Appropriate training in safe operation is required before starting work.
2. Operators must wear suitable work clothing and approved safety eyewear (PPE) at all times.
3. Before starting the machine, confirm that the voltage and air supply requirements shown on the data plate match your site's supply.
4. Ensure the clamping system is fully locked and secure before operation.
5. Adjustments to the workpiece must only be made when the machine is stopped or running at low speed. Never attempt adjustments at high speed.
6. Keep hands, tools, and any loose items well clear of the machine while it is starting or running.
7. Keep all electrical cables away from heat sources, oil, sharp edges, and moving components to avoid damage.
8. If any malfunction, unusual vibration, or abnormal noise occurs, immediately shut down the machine using the remote control and inspect the cause before restarting.
9. Never leave the machine unattended while operating. The operator may only leave once the machine has completely stopped, the power is switched off, and the transmission system is disengaged.
10. The machine must not be used outside its designated working range. Any damage or injury resulting from misuse is not covered by the manufacturer.
11. Do not operate the machine beyond its maximum cutting capacity, as this may result in equipment damage or personal injury.
12. Never attempt to change feed settings while the machine is rotating.
13. At the end of each job, remove all oil residue, metal shavings, and debris. Apply anti-corrosive oil to the cutting arm and main spindle to prevent rust.

Labelling Guidelines

Product safety signs and labels are designed to increase awareness of potential hazards associated with operating this equipment. Safety alert symbols highlight different levels of risk, such as DANGER, WARNING, or CAUTION. These symbols may appear on their own or alongside additional icons or pictographs.

Failure to follow the safety instructions indicated by these labels can result in serious injury. Always observe all warnings and adhere to recommended safety practices to minimise the risk of harm.

	**DANGER** Indicates a hazardous situation that could be fatal or cause serious injury.

	**WARNING** Indicates a potentially hazardous situation that may result in serious injury or death.

	**IMPORTANT** Indicates a potentially hazardous situation that could result in minor to moderate injury, damage to the machine or interruption of an important process.

	**IMPORTANT** Provides critical information for the completion of a task. There is no associated hazard to people or the machine.

Warning Labels

- Always read and follow all warning labels.
- Warning labels are provided to highlight potential hazards and ensure safe operation.
- Never ignore or remove warning labels from the machine.

Machine General Introduction

This manual provides all the essential instructions for the service, operation, and maintenance of the Circular Milling Machine. It is designed to ensure safe and efficient use of the machine.

About the Flange Facing Machine

The Flange Facing Machine is a highly configurable tool, offering a range of options and accessories to suit different applications.

Key features include:

- Rotary Unit with Turning Arm – The machine consists of a rotary unit mounted on a base with extensions, and a turning arm attached to the rotary unit.
- Simple Mounting – The machine can be securely mounted using chucking bolts on the inner diameter of the work surface. It can be quickly levelled and centred for accurate operation.
- Precision Blade Adjustment – Operators should adjust the carbide tip blades to ensure small, precise cuts and optimal surface finish.
- Adjustable Turning Arm – The turning arm can be set to achieve the desired swing clearance and machining range. An optional counterweight is recommended, especially for horizontal machining, but is not mandatory.
- Chucking System – The tubular, rigid chucking system includes adjustable feet and a built-in level for fast, accurate setup.
- Modular Design – Many components of the machine can be removed for easier transport, setup, or storage.
- ID Mounting Capability – The machine can be mounted on the inside of the workpiece using chucking bolts on the inner surface.

Operations

Troubleshooting Chart

This chart is provided to help operators identify and resolve common issues during machine operation. If a fault persists or is not covered in this chart, contact the machine manufacturer's technical staff for assistance.

Fault	Possible Cause	Action to Take
Machine will not rotate when air supply is on	1. Machine rotation blocked or stuck	Check by manually rotating the machine; if still faulty, contact technical staff
	2. Air supply not available	Ensure air supply is connected and operational
	3. Faulty drive motor	Inspect drive motor; contact technical staff if necessary
	4. Faulty air valve	Check valve operation and replace if required
	5. Incorrect air supply	Verify air volume and pressure meet machine specifications
Machine will not traverse	1. Feed selector not correctly engaged	Ensure gear is engaged as per gear selection procedures in this manual
	2. Direction lever not correctly engaged	Adjust lever to correct position
	3. Facing/Boring lever not correctly engaged	Check lever engagement according to operating instructions
Poor surface finish on flange	1. Tool tip worn	Replace or regrind tool tip
	2. Machine not correctly clamped	Check and tighten all mounting bolts and base legs
	3. Depth of cut too deep	Reduce the depth of cut to appropriate levels
	4. Tool loose	Tighten all tools securely
	5. Toolpost/swivel loose	Check and tighten all swivel screws
	6. Surfacing arm clamps loose	Re-tighten clamps according to surfacing arm procedures
	7. Carriage damping system incorrectly adjusted	Adjust damping system as per manual instructions
	8. Toolpost gib strip incorrectly adjusted	Adjust gib strip to correct settings
	9. Worn linear guides	Inspect and contact technical staff for replacement
	10. Incorrect balancing	Check machine balance and adjust as necessary

Changing Facing Arms

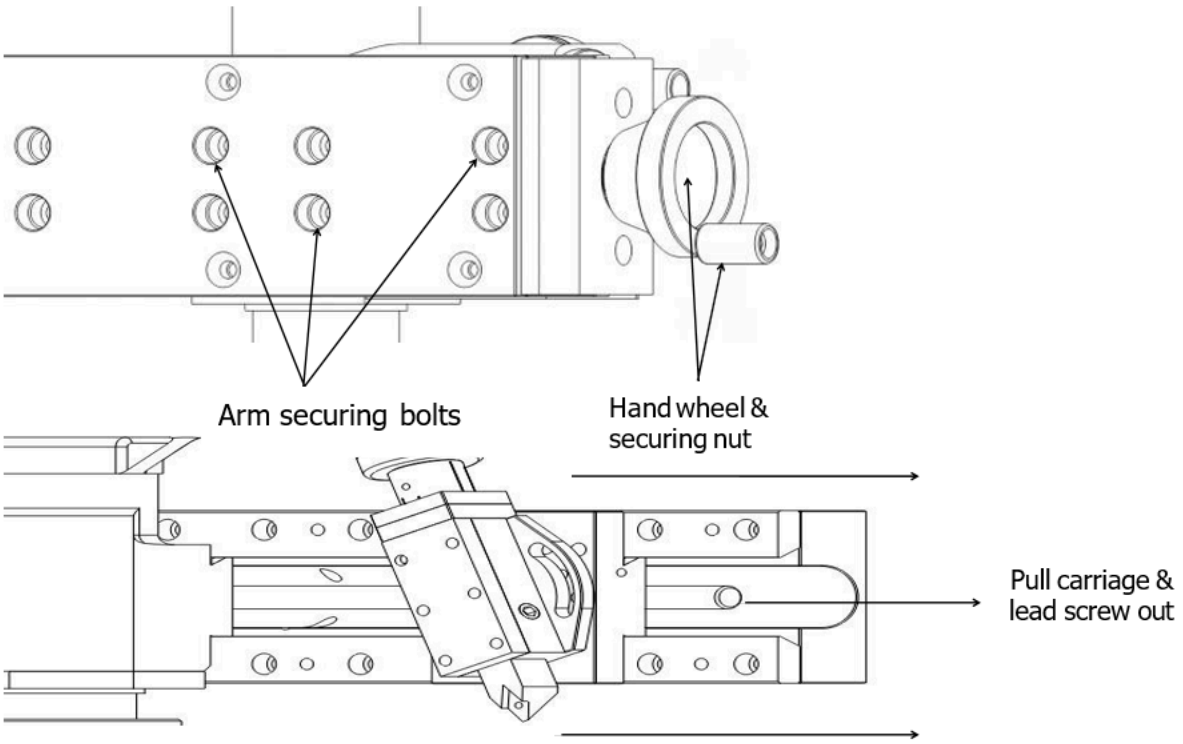
The SMG F610 Internal Flange Facer is supplied with different lengths of facing arms, which are fully interchangeable. Arms are usually supplied pre-assembled. The following instructions outline how to safely change a facing arm if required.

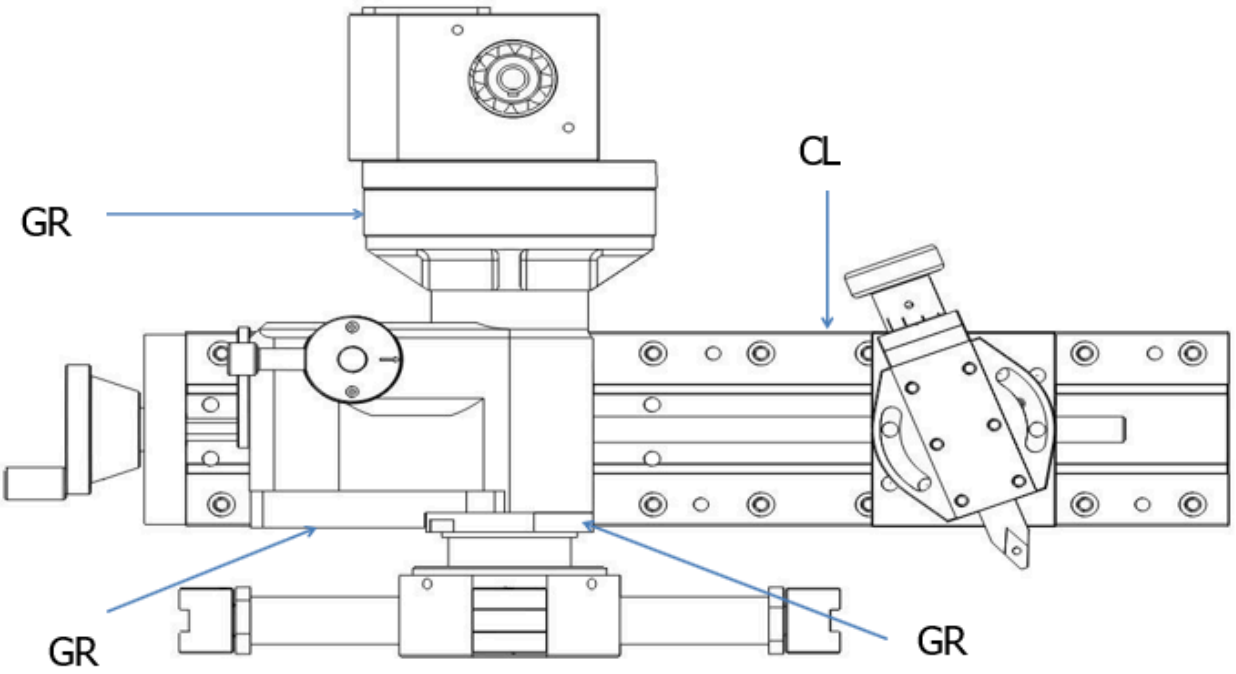
Procedure

1. Remove Tool Posts and Balance Arms
    - Before removing the facing arm, ensure that any tool posts and/or balance arms are removed.
2. Remove End Hardware
    - Unscrew and remove the M8 nut and hand wheel from the end of the arm.
3. Disengage Lead Screw
    - Pull the tool post carriage, including the lead screw, away from the arm to disengage it from the drive gear within the main machine body.
    - Take care not to damage the lead screw or misplace the gib strip during this step.
4. Support the Arm
    - Use chocks or lifting equipment to support the arm, preventing it from falling when the securing bolts are released.
5. Remove the Arm
    - Release the four M6 bolts at the back of the arm and lift the assembly away.

Installing a Replacement Arm

- Installation is the reverse of removal.
- When inserting the lead screw into the drive gear, ensure the outer hexagon drive aligns with the internal hexagon in the drive gear by rotating the lead screw slightly for correct engagement.





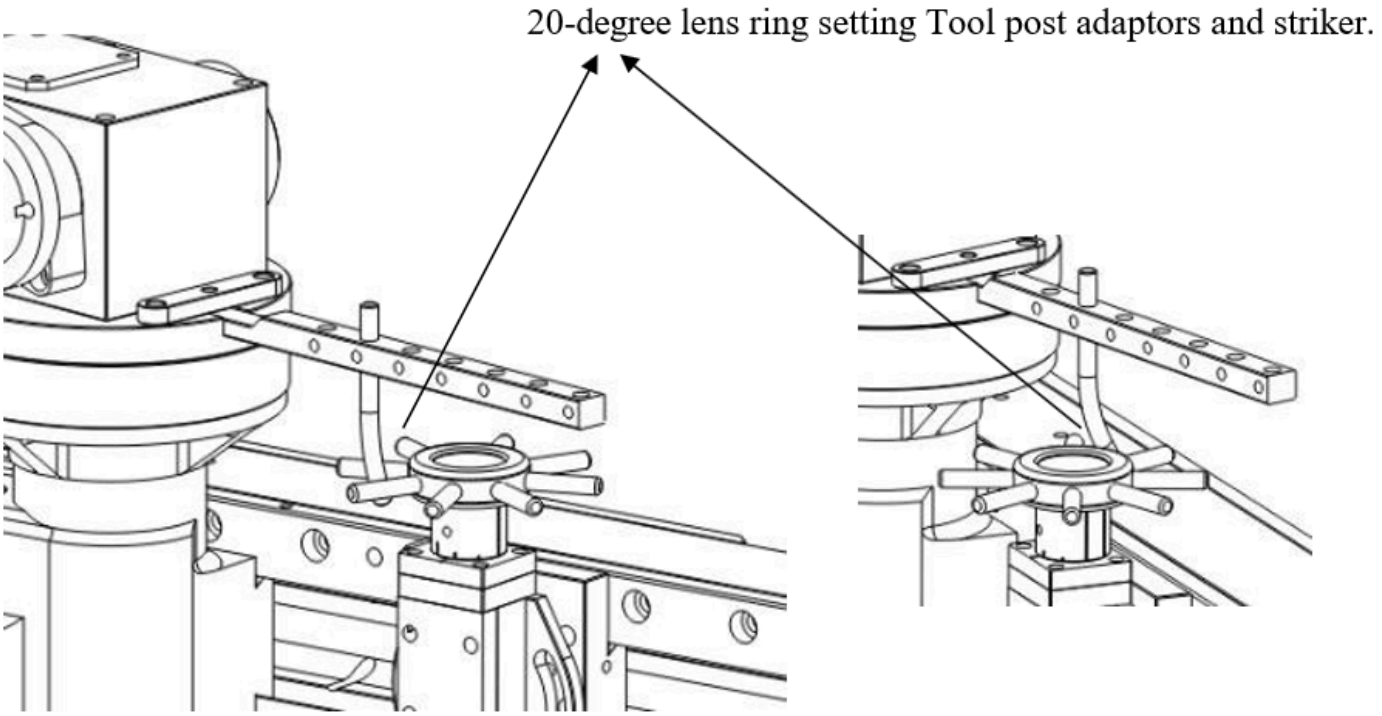
GR=Grease

CL= Clean/important to keep clean

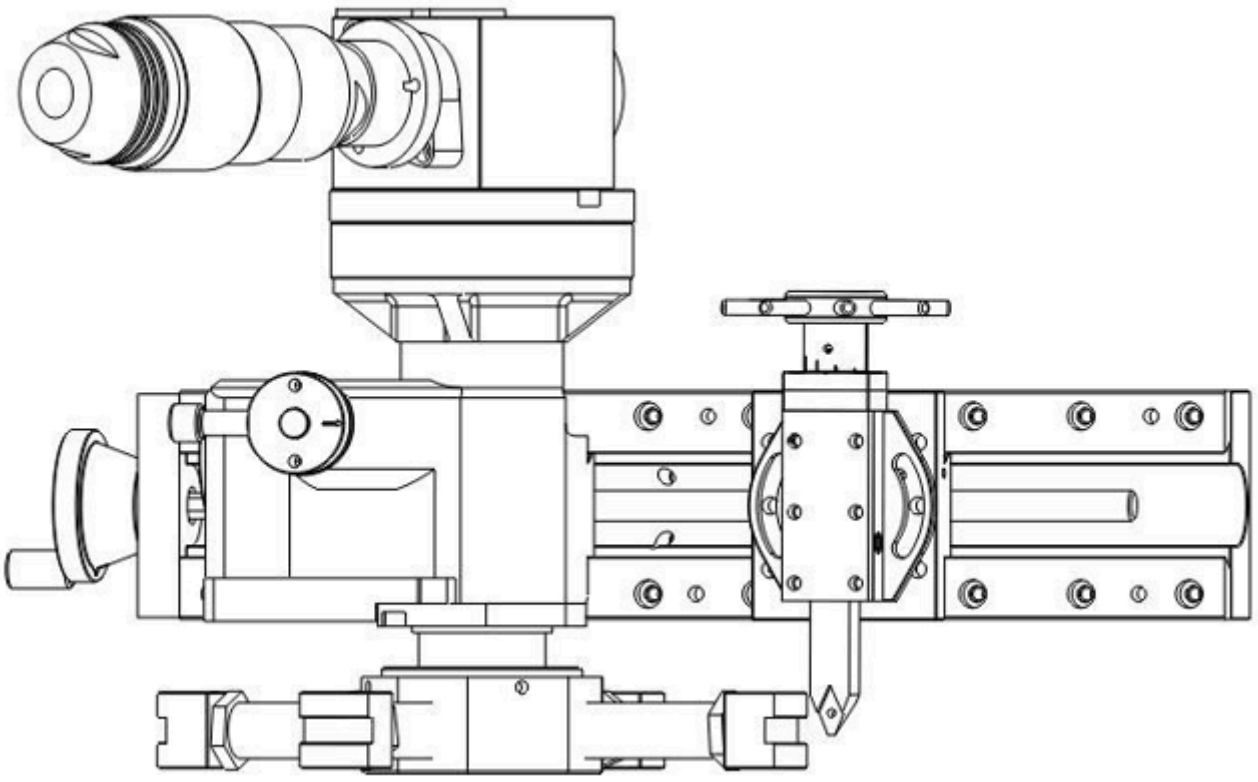
Lubrication & Maintenance Chart

Period	Action	Lubrication / Notes
After Use	- Clean rails, carriage, feedscrew, toolpost, toolpost feedscrew, and the machine in general	- Lightly oil or spray with WD40 or equivalent- Check air filter/lubricator
Weekly	- Grease gearbox nipple (maximum 2 strokes)- Grease linear bearings (maximum 2 strokes)	- Use Silkolene G39 semi-fluid, Elf TL, or equivalent
Quarterly	- Remove motor (2 × M6 screws)- Grease main gear and check adjustment- Grease drive gear	- Use Silkolene G39, Elf TL, or equivalent
Quarterly	- Check carriage operation and adjust as necessary- Check leadscrew and toolpost backlash	- Ensure smooth operation; adjust as required
For Storage	- If the machine will be stored for an extended period, clean thoroughly	- Spray WD40 into the motor to prevent corrosion

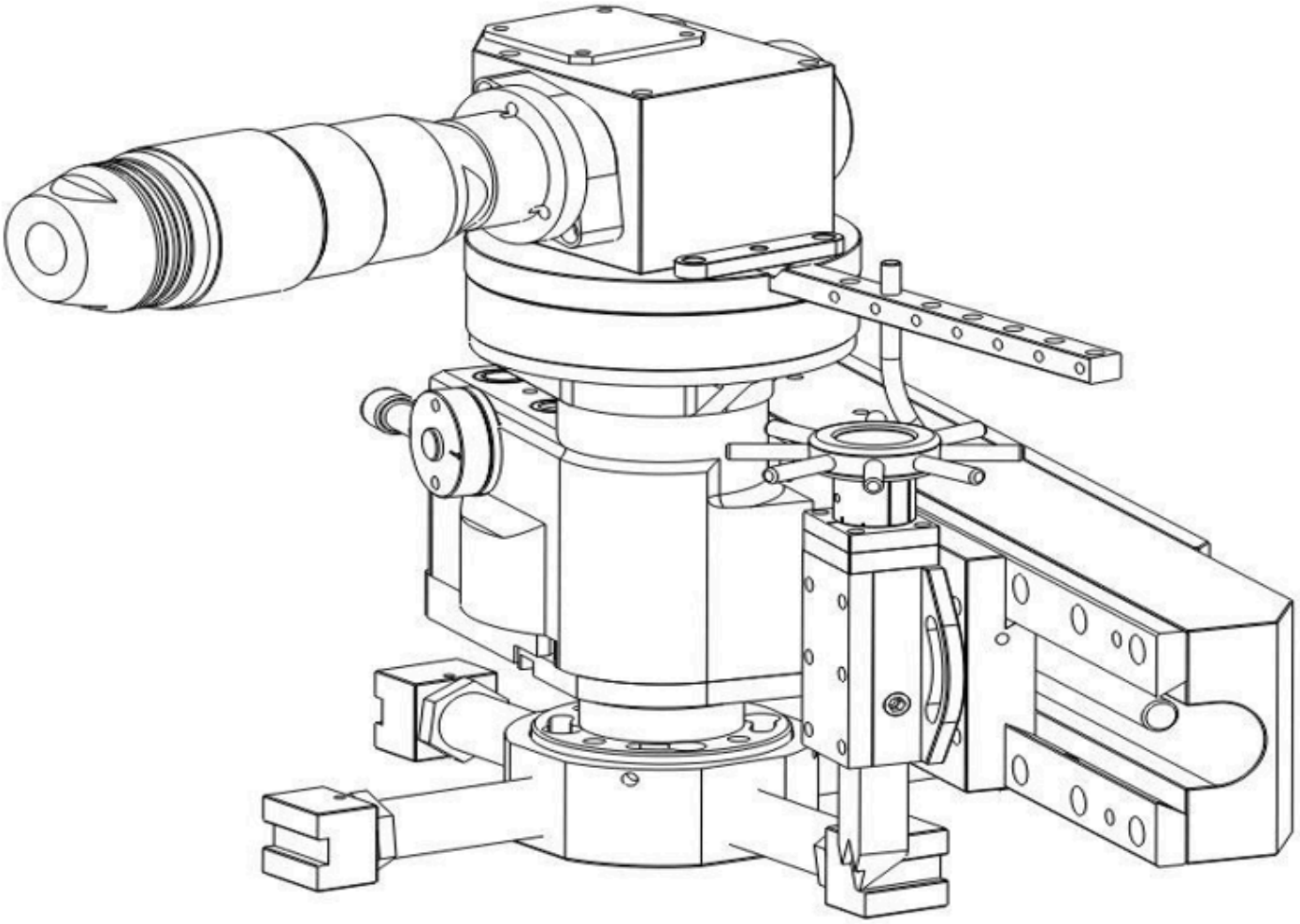
RTJ & Lens Ring Groove Settings



RTJ ring groove setting (Tool post adaptors and striker)



Striker Boring Feed Setting



Striker and Toolpost Starwheel

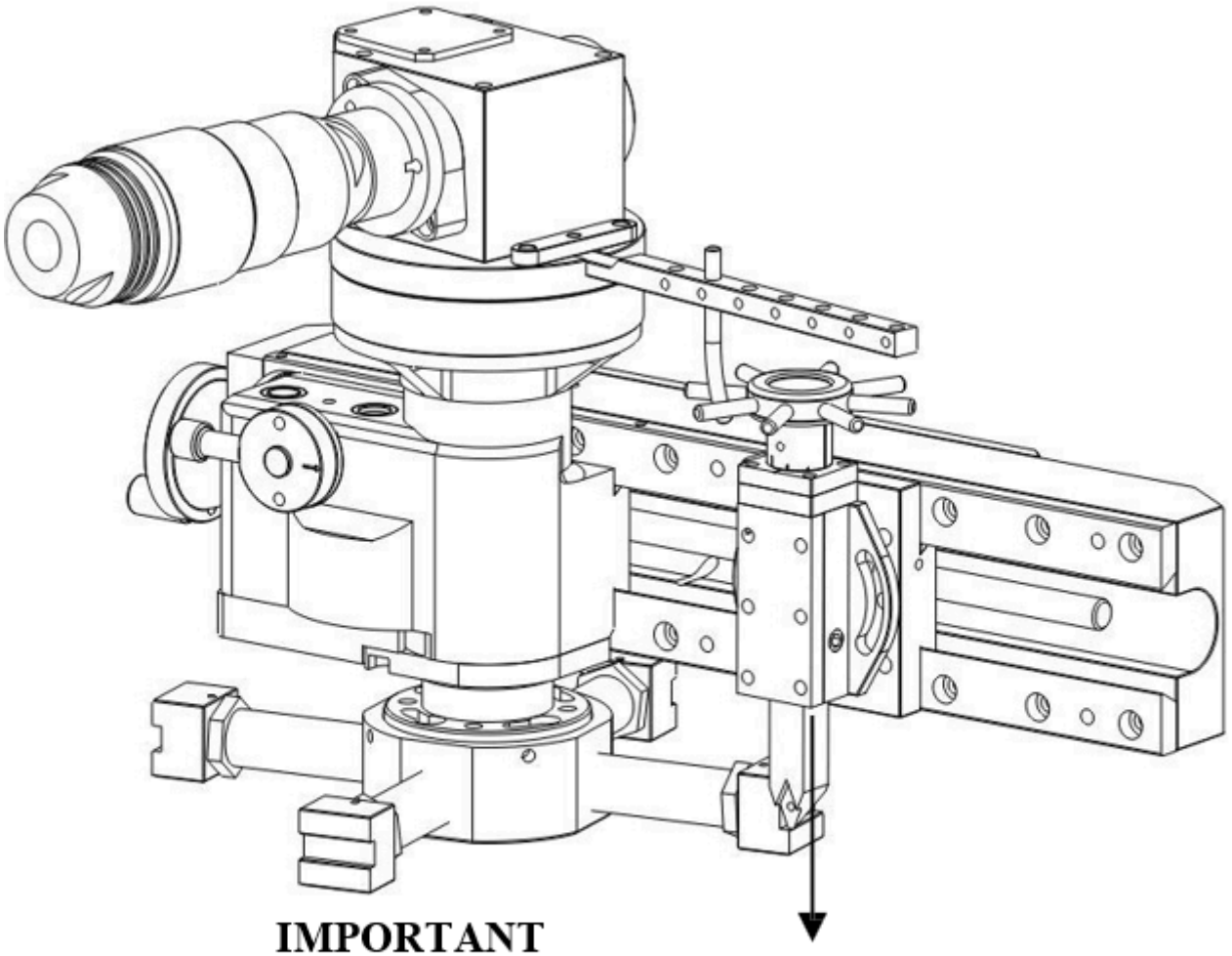
- The striker can be positioned on either side of the toolpost starwheel, allowing the toolpost to be fed up or down as required.
- The starwheel serves as a direct replacement for the standard toolpost feed knob.
    - **Important:** Ensure the drive pin is correctly seated in the feed knob slot before operation.
- Both the toolpost and striker bar can be angled to suit the required machining position.
- The starwheel may remain mounted on the toolpost during operation, depending on user preference.

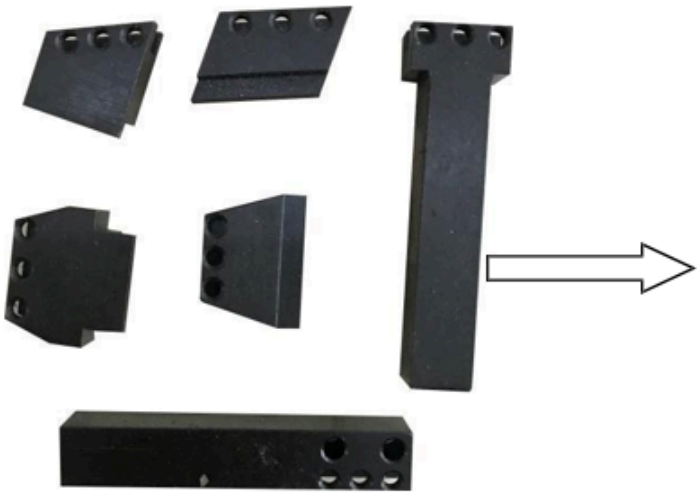
Safety Note: Always verify that the striker and starwheel are securely positioned before feeding the toolpost to prevent accidental movement or injury.

Toolpost Setting

- The toolpost can be operated at any axial angle to suit the machining requirement.
- To adjust the angle:
    1. Loosen the two locking screws (one on each side of the toolpost).
    2. Swivel the toolpost to the desired angle.
    3. Tighten the locking screws securely to hold the toolpost in position.

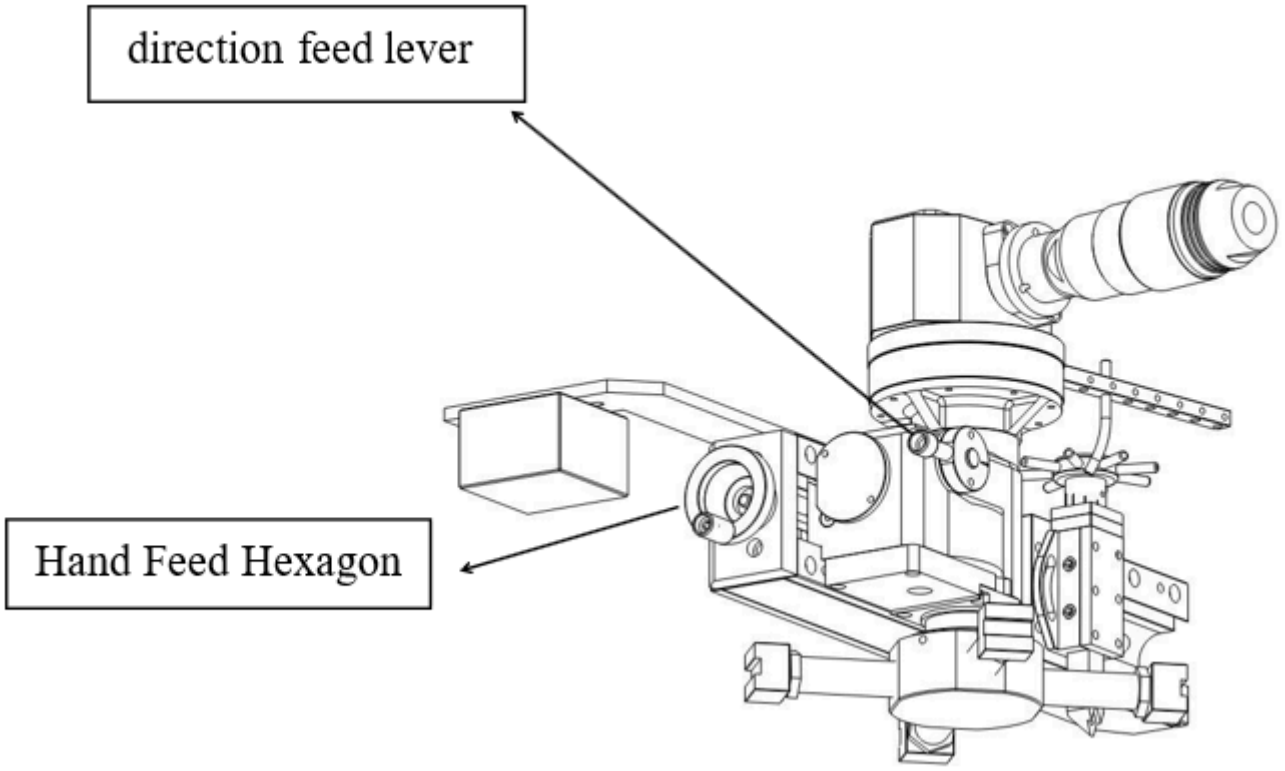
Safety Note: Always ensure the toolpost is firmly locked before machining to maintain accuracy and prevent movement that could cause injury or damage.





The machine is supplied with extra tools to assist in tight access situations," V" Grooves and boring applications.

Facing Direction



Selecting Feed Direction

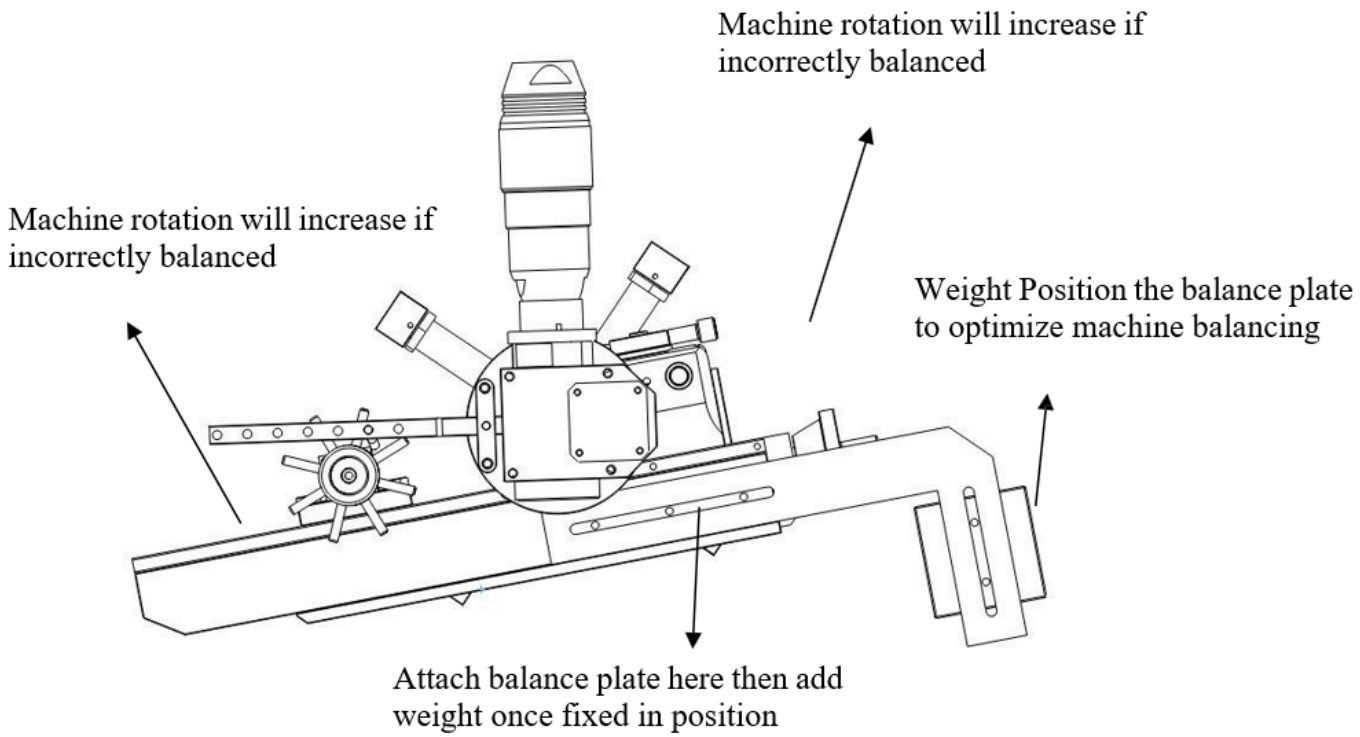
- To choose the correct feed direction, adjust the direction feed lever as follows:
    - Towards F (Fine Out) for fine outward feed.
    - Towards C (Coarse In) for coarse inward feed.

- While setting the lever, rotate the hand feed hexagon to engage the selected direction.

Note: Always verify the feed direction before starting the machine to ensure accurate and safe operation.

Gear Selector Position	Leadscrew Pitch	Feed Rate (mm/rev)	Feed Rate (Grooves/inch)
FINE	1.75 mm (Standard)	0.199	128
COARSE	1.75 mm (Standard)	0.795	32
FINE	1.25 mm (Standard)	0.142	179
COARSE	1.25 mm (Standard)	0.568	45
FINE	1.00 mm (Optional)	0.114	224
COARSE	1.00 mm (Optional)	0.455	56

Machine Balancing



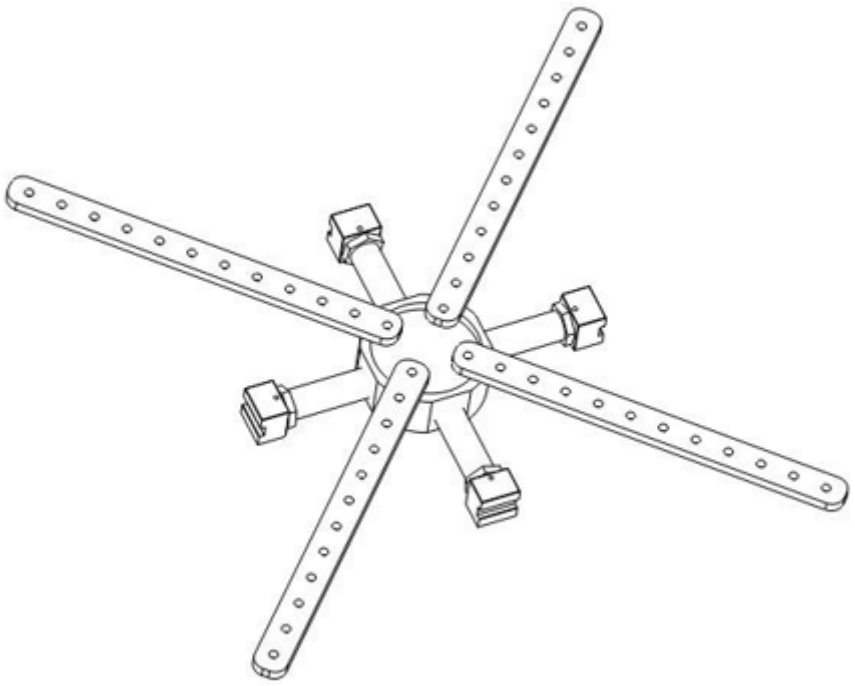
When machining at any angle other than horizontal, it is essential to balance the machine to reduce strain on the drive components and ensure smooth operation.

Balancing Procedure

1. Attach the Balance Plate
    - Secure the balance plate to the machine before starting.
2. Add and Adjust Counterweight
    - Attach the counterweight to the balance plate.
    - Adjust its position until the machine rotates smoothly without any increase or decrease in speed.
3. Check Key Positions
    - Pay close attention to the 7 o'clock and 2 o'clock positions (with 12 o'clock as the highest point), as these are where weight transfer is greatest.
4. Optional – Motor Removal for Accuracy
    - For more precise balancing, the motor can be removed.
    - Rotate the machine by hand to ensure it moves at an even pace with no noticeable acceleration or deceleration.

Safety Note: Always ensure the machine is securely supported during balancing to prevent accidental movement or injury.

Machine Base Setting

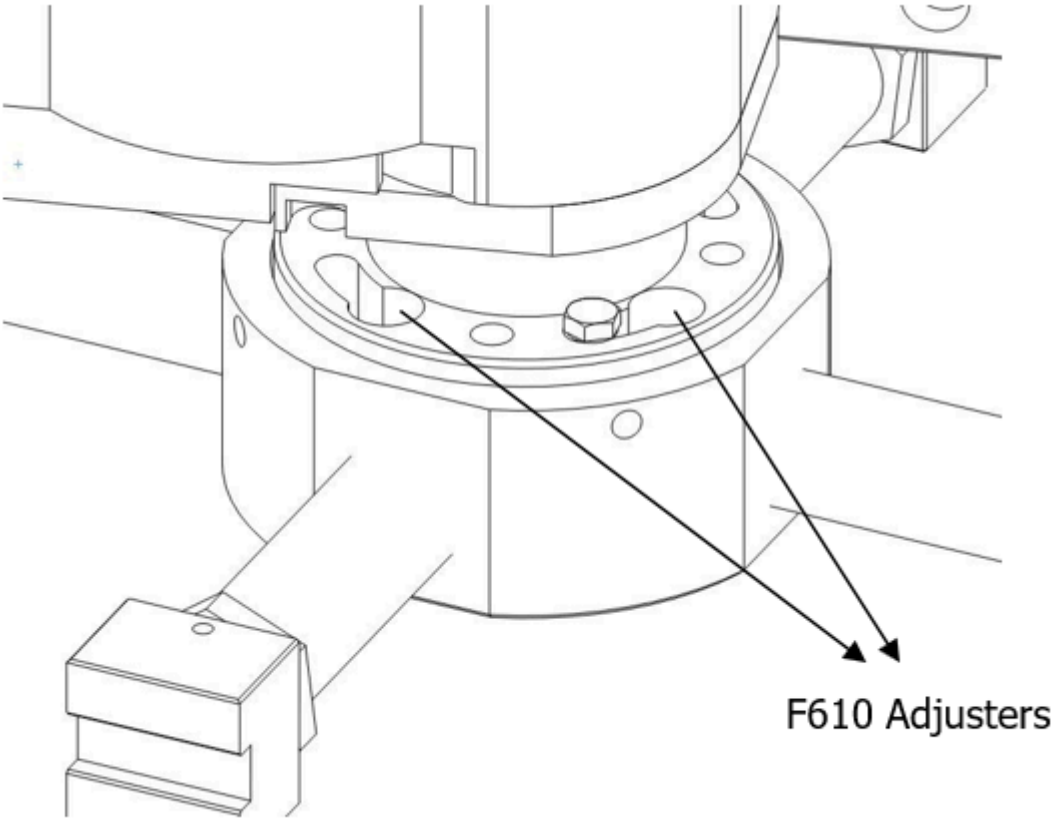


Base Assembly Installation

1. Measure the Flange Bore
    - Check the mounting bore of the flange to be machined. Ensure it falls within the working parameters of the machine.
2. Select Components
    - Refer to the table on the following page.
    - Select all parts marked with a tick (✓) in the same row as the diameter range of the flange to be machined.
3. Install Base Components
    - Screw the base components into the correct base until they measure 6 mm (0.25”) below the bore mounting dimension.
4. Attach Setting Straps
    - Bolt the setting straps onto the base.
    - Ensure straps overlap the bore dimension by at least 25 mm (1.0”).
5. Position the Base
    - Insert the base into the flange bore and extend the necessary jacking bolts.
6. Adjust the Base
    - Make fine adjustments by tightening and loosening opposing jacking bolts to achieve proper alignment.
7. Using the SMG F610 Collet Base
    - Place a socket on the hex nut and tighten to extend the three jaws.
    - Ensure the jaws are secure against the mounting bore before operation.

Safety Note: Always verify that the base is securely fitted and stable before starting machining to prevent movement or accidents.

Machine Setting



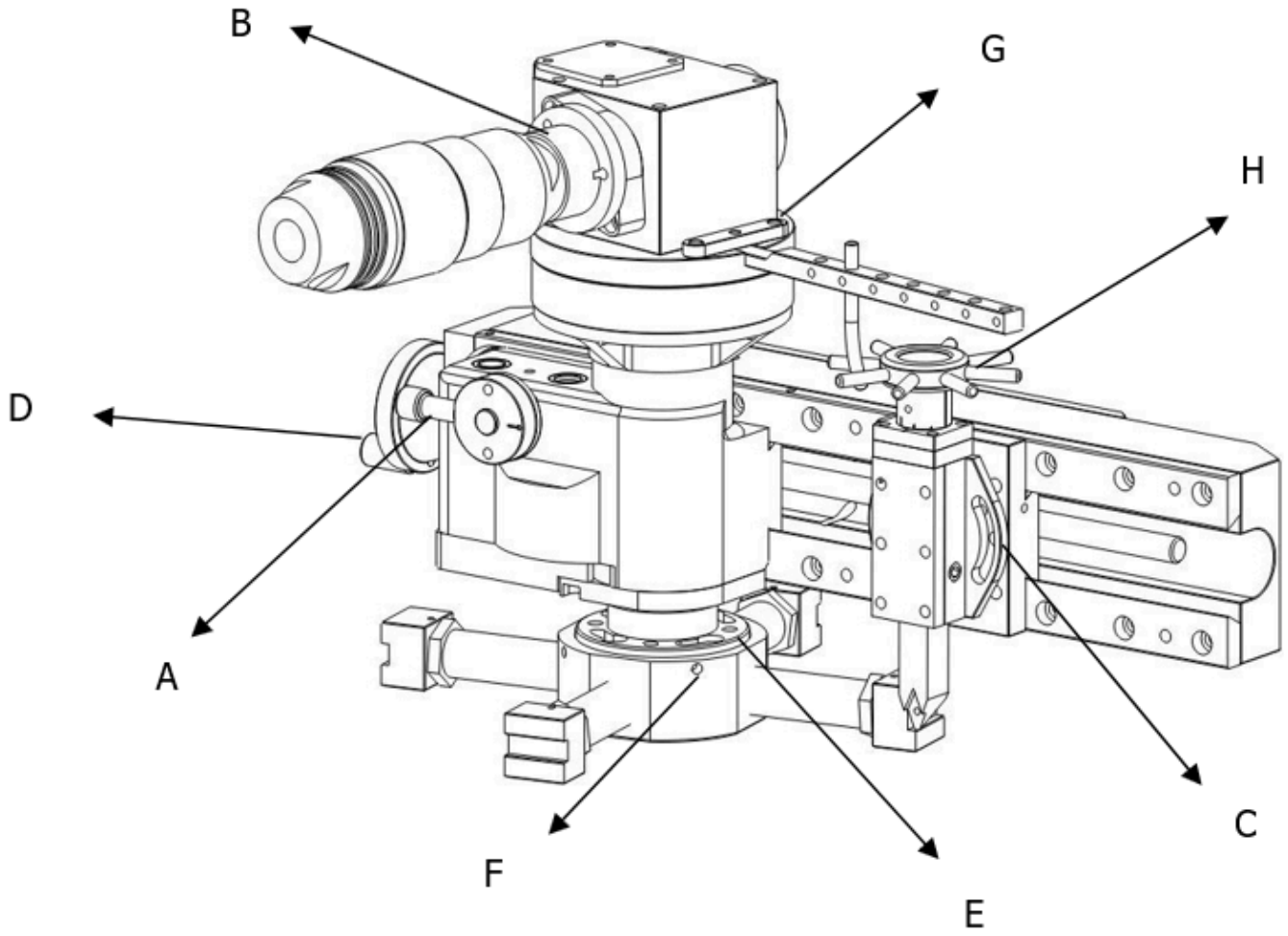
Fine Setting Adjusters

- The machine is equipped with fine setting adjusters in its mounting flange, allowing precise adjustment to achieve exact flatness when required.

Adjustment Procedure

1. Loosen Mounting Bolts
    - Loosen the four mounting bolts on the flange.
2. Adjust Using Grub Screws
    - Use a cut-down Allen key to screw down the adjusting grub screws until the desired flatness is achieved.
3. Secure and Verify
    - Tighten the mounting bolts and recheck the readings.
    - Repeat adjustments as necessary to achieve accurate alignment.

SMG F610 Features



A- Direction Lever(Facing –IN (Coarse)/OUT(Fine)	E- Machine Locking Bolts
B- Air Inlet(must be filtered/lubricated air)	F- Base fine adjusting screws
C- Tool post swivel locking screws	G- Kick Feed Setting slot
D- Lead screw hand feed	H- Tool post Feed Knob

Gear Direction



- I (Inward): Feeds from outside cutting to inside cutting.
- N (Neutral): No feed movement; machine is disengaged.
- O (Outward): Feeds from inside cutting to outside cutting.

General Operation

The following procedures are provided to ensure your machine is installed, operated, and maintained correctly and safely.

Important Before Operating

1. Observe All Safety Procedures
    - Ensure all relevant safety precautions are followed before operating the machine.
2. Check Equipment Condition
    - Do not pressurise the machine if the inlet hose or any part of the equipment appears damaged or unserviceable.
3. Wear Personal Protective Equipment (PPE)
    - Operators must wear safety glasses while using the machine.
4. Operate Within Specifications
    - Do not attempt to machine beyond the machine's specified limits.
    - Operating outside specified sizes will invalidate the warranty.
5. Machine Neutrality
    - Ensure the gearbox is in neutral and the air supply valve is closed before connecting the air supply.
6. Controlled Operation
    - Never allow another person to operate the air control valve while the machine is in use.
7. Never Leave Unattended
    - Do not leave the machine running unattended, and never leave the air line pressurised when disconnected.
8. Training Requirements
    - Ensure all personnel are fully trained in machine operation and relevant safety procedures.

Cautions

1. Air Filter/Lubricator
    - Do not operate the machine without the air filter/lubricator connected.
    - Operating without it will invalidate the motor manufacturer's guarantee.

2. Feed Adjustments
    - Do not attempt to change the feed settings while the machine is rotating.