



SMG F1000H

Hydraulic Flange Facing Machine

Operating & Maintenance Manual



Hydraulic Driven Variant

For your safety, read this manual carefully and keep it for future reference.

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1. Introduction

Thank you for choosing this Capital Machinery Sales portable flange facing machine. This manual describes the machine's function, performance, operation and precautions, and should be read in full before the machine is used.

Capital Machinery Sales Pty Ltd continually improves its products, and specifications may be updated without prior notice. Images, text and data in this manual are provided for reference; always refer to the actual machine for exact specifications.

Disclaimer of Liability

- Capital Machinery Sales Pty Ltd is not responsible for loss caused by operating the machine outside its designed performance envelope.
- This manual must be read before operating the machine. Capital Machinery Sales Pty Ltd is not liable for loss arising from unreasonable or incorrect operation.
- Do not operate the machine continuously for more than 12 hours under full load. Standard duty is 8 hours per day, reduced to 4 hours per day where ambient temperature exceeds 30°C.
- Use only accessories supplied by Capital Machinery Sales. Loss caused by unauthorised modification or the use of non-approved accessories is not covered.

2. Safety Information

2.1 How to Read the Safety Notices in This Manual

This manual uses the following notice types to draw attention to safety and operating information:

**WARNING**

Indicates a hazard that could result in serious injury if not avoided.

CAUTION

Indicates a hazard that could result in minor injury or damage to the machine if not avoided.

NOTE

Indicates additional information that helps ensure correct operation.

2.2 Health and Safety

- Read and understand this manual fully before operating the machine.
- Keep this manual with the machine for ready reference.
- Do not use the machine without an air filter/lubricator fitted — operating a pneumatic-driven unit without one will damage the air motor.
- Do not attempt to alter the feed settings while the machine is rotating.
- Do not operate the machine until you fully understand the operating procedure.

- Do not wear loose-fitting clothing or jewellery; tie back long hair and do not wear a hat, to avoid injury to the operator or others nearby.

2.3 Safety Precautions

- Read this manual and check the machine against the packing list before use, and be aware of the safety precautions, machine performance and correct operating method.
- The operator must complete safe-operation training before use.
- The operator must wear appropriate protective clothing and safety glasses.
- Before starting the machine, confirm the supply voltage, air pressure, or hydraulic supply matches the machine's requirements.
- Check that the clamping system is locked before starting the machine.
- Only adjust the workpiece at low speed or in the free (unpowered) position — never adjust the workpiece at high speed.
- Keep hands and objects clear of the equipment when starting it, to prevent injury.
- Keep electrical cabling and hydraulic hoses away from heat, oil and sharp edges.
- If a malfunction or abnormal noise occurs, isolate the power supply immediately and inspect and repair the fault before continuing.
- Do not leave the machine running unattended. Operators may only leave once the machine has stopped, the power supply is isolated and the transmission is in the free (neutral) position.
- Do not use the machine beyond its rated working scope. Capital Machinery Sales is not responsible for consequences arising from such use.
- Do not run the machine beyond its rated cutting capacity, to avoid damage or injury.
- Remove oil residue and swarf after use, and apply anti-corrosive oil to the cutting arm and main shaft.
- Replace worn tooling promptly to maintain machining quality.
- Isolate all power and remove the plug before clearing a blockage, changing tooling, or taking measurements.
- If the machine stalls, do not force it to continue running. Allow the motor to cool naturally, then re-check the feed setting before restarting.
- After the machine stops, switch off the power and return the transmission to the free (neutral) position.
- Do not use the machine in strongly corrosive conditions, in wind and rain, or in flammable or explosive environments.

3. Product Overview and Specifications

3.1 Main Features

- Internally mounted with a small working radius, suitable for confined work areas.
- Compact, lightweight construction that is easy to transport.
- Modular design for easy assembly and disassembly.
- Fitted with a preload braking system for intermittent cutting and high productivity.
- Can be used horizontally, vertically, inverted, tilted or in any orientation.

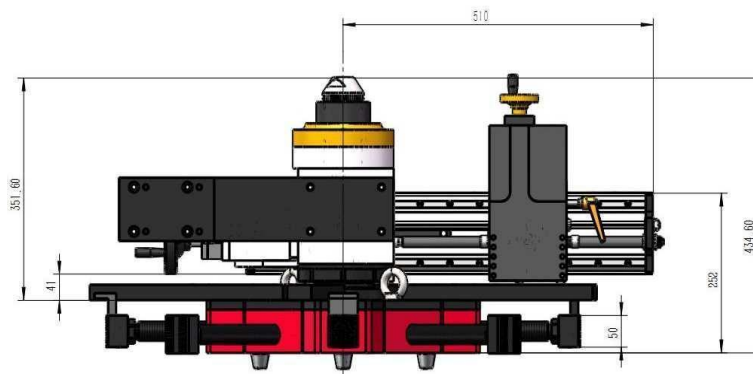
- This machine is capable of flat faces, sealing grooves as well as raised face(RF) ring type joints(RTJ).
- Available with pneumatic drive or hydraulic drive.
- Suitable for cast iron, alloy structural steel, stainless steel and other metals, for flange sealing surface repair and general flange facing operations.

3.2 Technical Data

Parameter	Value
Minimum facing diameter	Ø160 mm
Maximum facing diameter	Ø1000 mm
Minimum clamping diameter	Ø158 mm
Maximum clamping diameter	Ø820 mm
Rotating speed	0–33 RPM
Tool post travel	102 mm
Tool holder rotation angle	±30°
Machine drive	Hydraulic
Air pressure (pneumatic drive)	0.6–0.8 MPa, flow 1.798 m³/min
Hydraulic drive requirement	Power: 7.5 kW System pump flow: 36 L/min Working pressure: 10 MPa Voltage: 415 V / 50 Hz, 3-phase

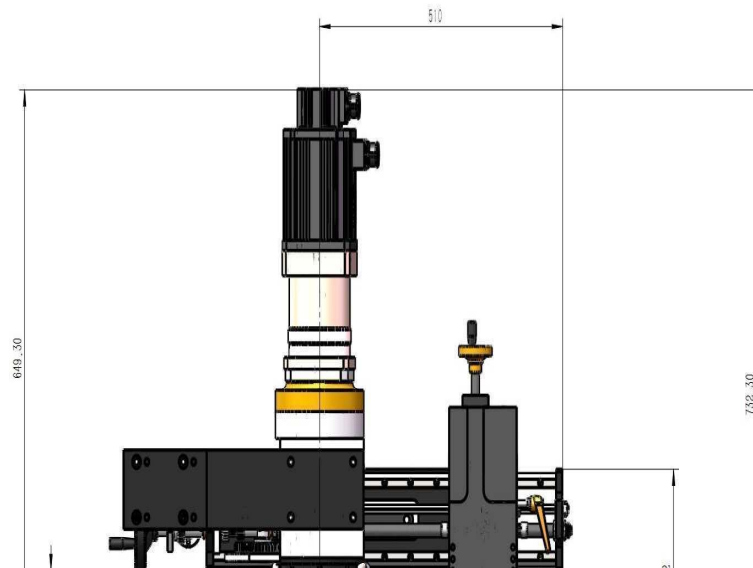
3.3 Machine Diagrams

Pneumatic Driven



Hydraulic Driven

The hydraulic variant uses a hydraulic motor in place of the pneumatic motor, giving controlled rotation speed via the connected hydraulic power unit, without the need for a compressed air supply. See section 5.5 for hydraulic drive setup and speed settings.



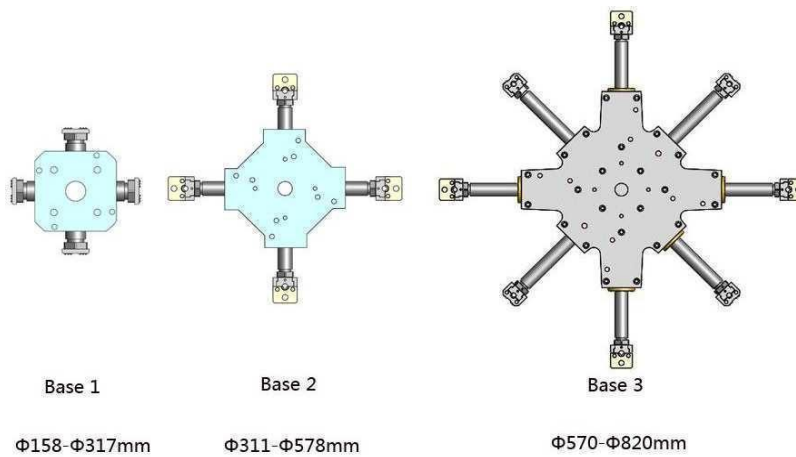
4. Installation

4.1 Machine Base Selection and Installation

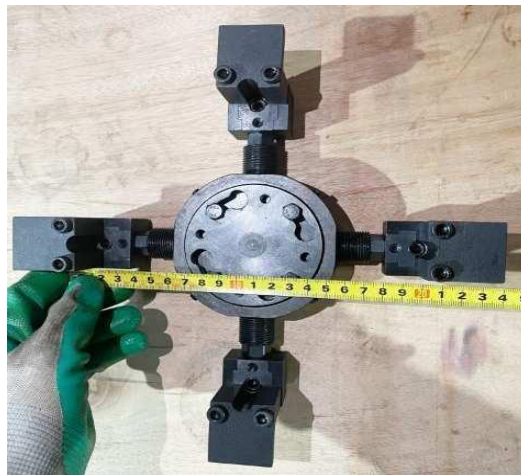
Measure the mounting inner bore of the flange to be machined and confirm it falls within the machine's working parameters (see section 3.2).



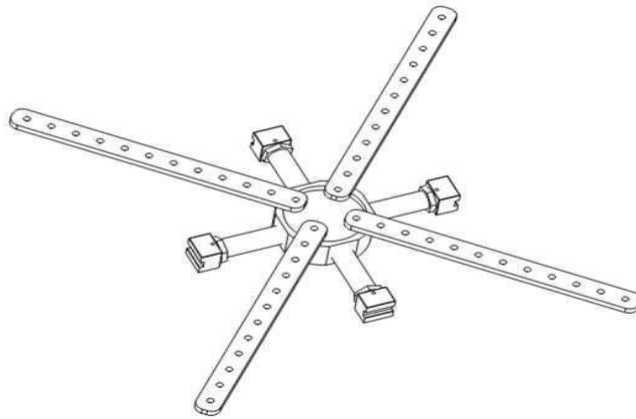
Select and install the appropriately sized expansion base for the bore diameter:



Screw the base components into the selected base until they sit approximately 6 mm below the inside bore mounting dimension.



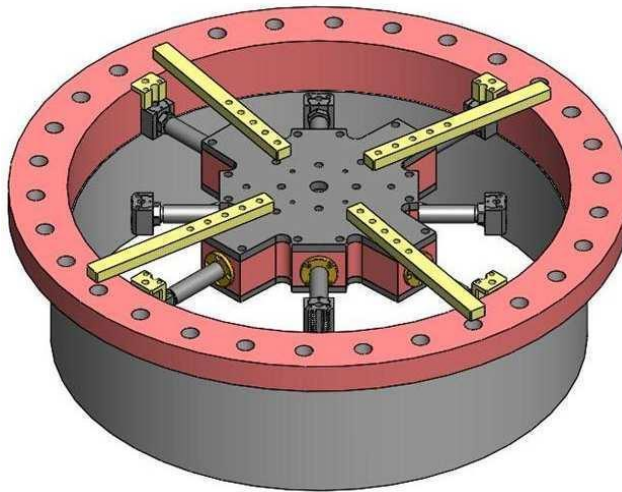
A hook-up or a fixed level ruler can be used to support the base while it is positioned in the bore.



Bolt the fixed level ruler onto the base, ensuring the ruler overlaps the bore dimension by at least 25 mm.



Position the base into the flange bore and screw out the jacking bolts as required. Fine adjustments are made by tightening and loosening opposing jacking bolts.

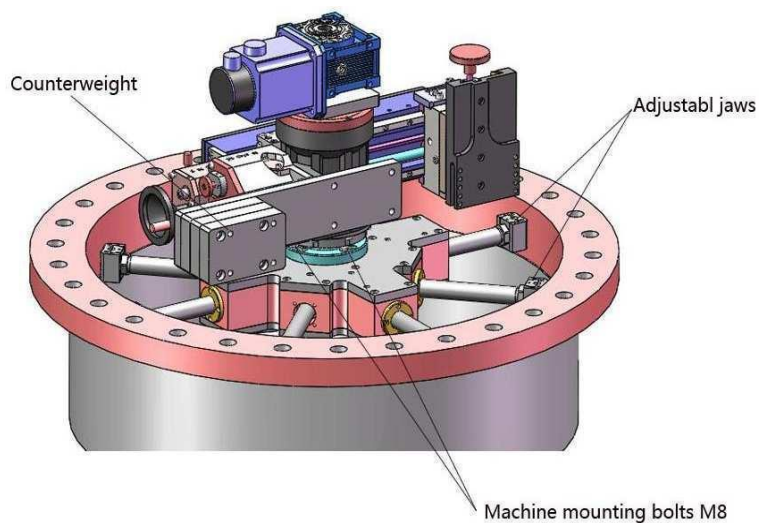


Once the base is installed and level, remove the fixed level ruler.



4.2 Machine Body Installation and Adjustment

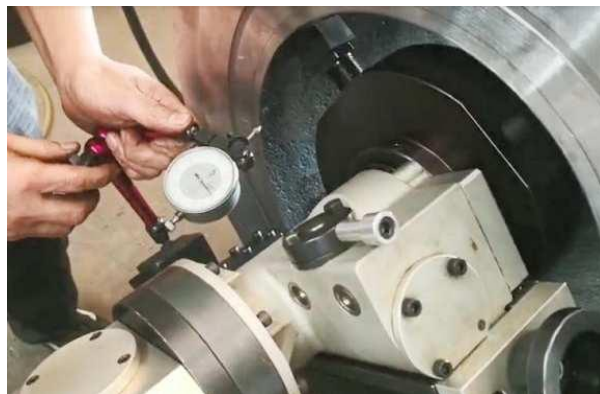
The base and the machine body are connected by a nut.



1. Fit four M8 mounting bolts to the base, positioned 20 mm from the base's mounting surface.
2. Ensure the tool holder is at the top of its travel and the tool is removed, so the tool holder cannot contact the flange face during installation.
3. Install the main unit onto the base and secure the four M8 mounting bolts. The locating pin on the underside of the main shaft engages with the pin hole on the base to ensure accurate positioning.
4. Loosen the retaining nut and adjust the position of the working arm to suit the size of the flange face.



5. For precise positioning, fit a magnetic-base dial indicator to the tool holder and use it to true up the centre, horizontal and vertical alignment. Adjust the expansion blocks as required.



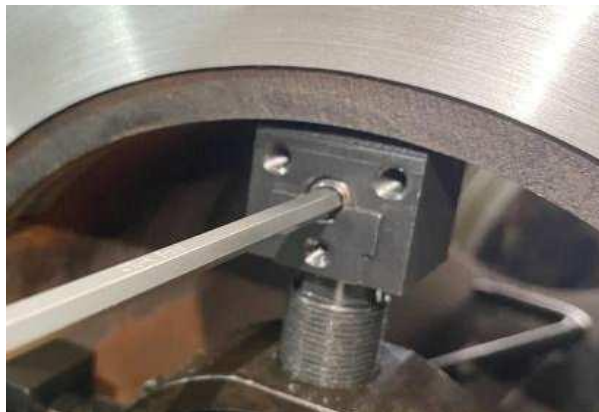
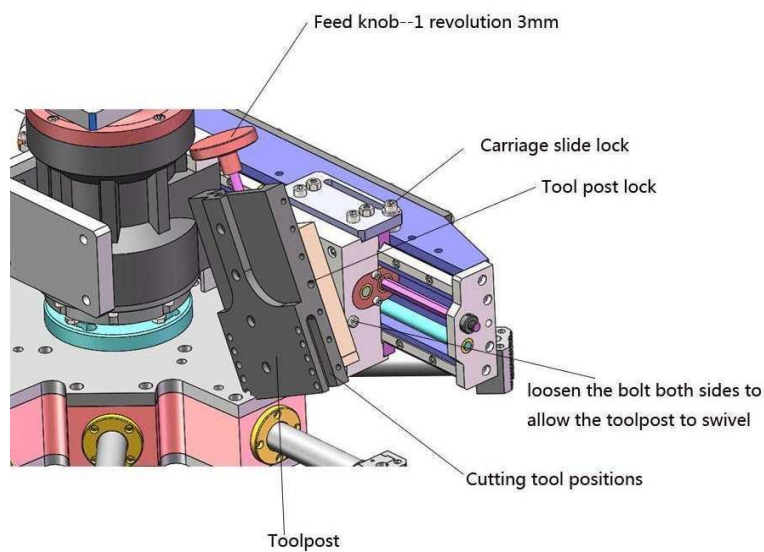


6. Before machining, confirm that all fixing bolts are tight.

5. Operation

5.1 Tool Post Setting

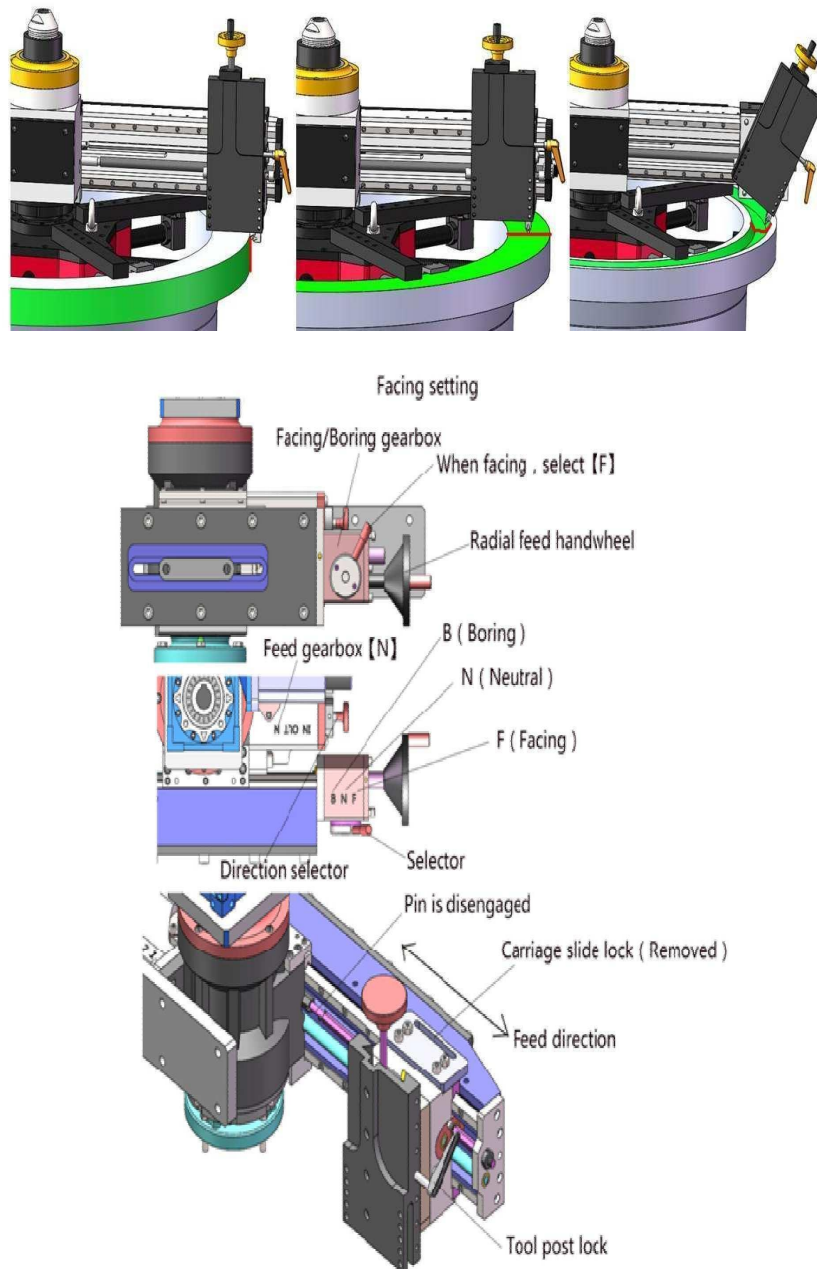
The tool holder can be swivelled to any angle about its axis. Loosen the two M12 rotation locking screws on either side to rotate the tool holder; after setting the required angle, re-tighten both screws. This function is used for sealing grooves, chamfering and similar profiles.



NOTE

When facing (plane machining): remove the slide plate locking bolt (M8) and lock the tool holder locking handle. When boring: install and lock the slide plate locking bolt (M8), and release the tool holder locking handle.

5.2 Facing Processing



1. Move the gearbox selector (IN / OUT / N) to the N (neutral) position.
2. Remove the slide plate locking bolt (M8).
3. Switch the gear selector to the F (Facing) position, gently turning the horizontal feed handwheel to help the gear engage.

Tip: Make sure the gear has fully engaged before proceeding.

4. When machining a flat face, lock the tool holder locking handle.

5.3 Boring Processing

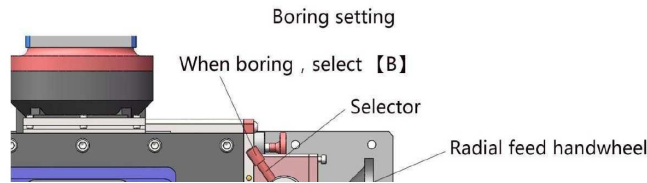


Diagram reproduced as it appears in the original manufacturer manual (partial).

1. Move the gearbox selector (IN / OUT / N) to the N (neutral) position.
2. Release the tool holder locking handle.
3. Switch the gear selector to the B (Boring) position. While engaging the gear, rotate the tool holder feed handwheel so the locating pin seats fully in its slot.

Tip: Confirm the pin has seated correctly in the slot before proceeding.

4. Once the tool holder position is confirmed, lock the slide plate locking bolt (M8).

5.4 Feed Speed and Direction Settings

Feed direction is set with the feed direction pull rod (IN / OUT / N) and feed speed with the feed speed pull rod (gear positions 1–3).

Facing Processing Feed Speed

Feed direction	Gear position	Feed speed (mm/r)
IN	1	0.128
IN	2	0.191
IN	3	0.383
OUT	1	0.164
OUT	2	0.246
OUT	3	0.492

Boring Processing Feed Speed

Feed direction	Gear position	Feed speed (mm/r)
IN	1	0.09
IN	2	0.138
IN	3	0.277
OUT	1	0.119
OUT	2	0.178
OUT	3	0.356

5.5 Installing the Machine Drive

This machine can be fitted with either a pneumatic drive or a hydraulic drive. Install the drive appropriate to your machine configuration.

Pneumatic Drive

- Fit an air compressor with an air storage tank to ensure a continuous air supply — without one, the machine will stop working during operation.
- Fit an air filter. Moisture in the compressed air supply can corrode the gears in the air motor.

NOTE

Apply professional-grade air tool oil to the air motor before and after each use.

Hydraulic Drive

The hydraulic drive is powered by the SMG 7.5kW Hydraulic Power Unit — see Part 2 of this manual for full setup and operating instructions.

NOTE

Adjust the feed rate to suit the material being processed.

6. Maintenance

Follow the schedule below to keep the machine in good working order.

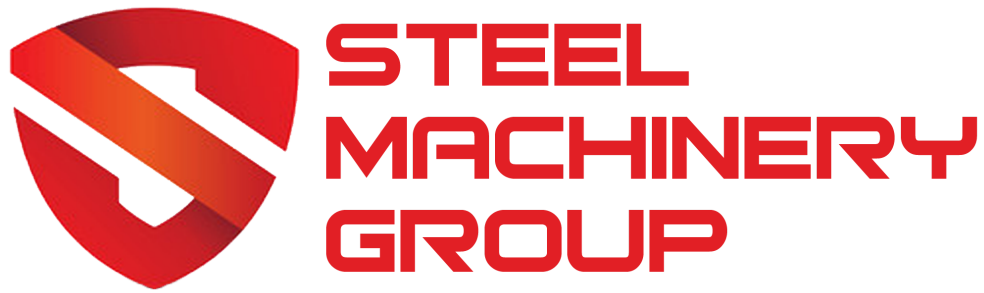
Period	Action	Lubrication
After use	Clean the rails, carriage feed screw, tool post, tool post feed screw and the machine generally. Check the air filter/lubricator.	Light oil or WD-40 (or equivalent).
Weekly	Grease the gearbox nipple (2 strokes max) and the linear bearing (2 strokes max).	G39 semi-fluid Elf TL (or equivalent).
Quarterly	Remove the motor cover screws, grease the main gear, check adjustment and grease the drive gear.	G39 semi-fluid Elf TL (or equivalent).
Quarterly	Check carriage operation and adjust as necessary. Check lead screw backlash and tool post backlash.	—
Storage	If the machine will be stored for an extended period, clean it thoroughly and spray WD-40 into the pneumatic motor.	—

7. Troubleshooting

The table below covers common faults. If a fault persists or falls outside this table, contact Capital Machinery Sales technical support (see Part 2 — Warranty and Support).

Fault	Possible cause	Action
Machine will not rotate when the air/hydraulic supply is on	Check whether the machine rotates freely by hand	Contact technical support
	Air or hydraulic supply not available	Check the supply
	Faulty drive motor	Check the drive motor — contact technical support
	Faulty control valve	Check operation of the valve
	Incorrect supply pressure/flow	Check the volume/pressure
Machine will not traverse	Feed selector not correctly engaged	Check the gear is fully engaged
	Direction lever not correctly engaged	Check the gear is fully engaged
	Facing/boring lever not correctly engaged	Check the gear is fully engaged
Poor surface finish on flange	Worn tool tip	Replace the tool
	Flange not clamped securely	Check and tighten all mounting screws and tension blocks
	Feed rate too high	Reduce the feed rate
	Worn track guide	Inspect and contact Capital Machinery Sales
	Machine not running in balance	Adjust the machine balance (counterweight)
	Loose tool	Tighten the tool
	Loose working arm	Tighten the working arm screws

PART 2



HYDRAULIC POWER UNIT

OPERATION MANUAL



WARNING!

Read this Operation Manual carefully before using this equipment. Failure to understand and follow the contents of this manual may result in serious personal injury or equipment damage.

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1. Introduction

This hydraulic power unit is specially designed to drive pipeline beveling and grooving equipment, and meets the operating requirements of hydraulically actuated tooling.

The hydraulic system is a precision assembly. Correct adjustment, reasonable use, correct operation, and careful maintenance will deliver satisfactory performance and a long service life. Poor practice in any of these areas will have the opposite effect.

Read this manual carefully and refer to its requirements throughout commissioning and use of this hydraulic power unit.

2. Safety Information

Safety Alert Definitions

This manual uses the following notice types to draw attention to safety and operating information:

**WARNING**

Indicates a hazard that could result in serious injury if not avoided.

CAUTION

Indicates a hazard that could result in minor injury or damage to the machine if not avoided.

NOTE

Indicates additional information that helps ensure correct operation.

Operator Safety

1. The operator must be trained, and must be competent in the equipment's performance and operation, before operating this unit.
2. Keep the hydraulic power unit clean. Flammable, explosive, corrosive, or other materials that could affect the safe operation of the hydraulic system must not be placed on or near it.
3. Connect pressure oil pipes, oil lines, and cables correctly. Single-phase and three-phase cables must be properly connected — never use damaged or bare cable.
4. Before first use, fill with sufficient ISO VG46 (L-HM46) anti-wear hydraulic oil; the level gauge should read approximately 130 L.
5. With three-phase power and the earth connection made, run the hydraulic pump idle for 2 minutes. Confirm the pump motor rotates in the correct direction, that the sound is normal, and that there is no leakage from hydraulic components or pipe joints.
6. Return the cutting tool to a clear position before starting — do not start with the tool engaged in a feed position.
7. When setting the tool's initial position manually, allow for pipe wall irregularity and eccentricity. Keep sufficient clearance between the blade and the pipe to prevent tool collision.

8. When finishing work, switch off the power supply first, then remove the workpiece. Clean the machine and coat it with anti-rust oil.

9. This unit requires a 380 V three-phase supply with an earth connection.

Operating Precautions

- Do not operate the unit if the oil level in the tank has not reached the reference level.
- Monitor the condition of the hydraulic oil. If it is deteriorated or heavily contaminated, replace it with new filtered oil immediately.
- Check the oil filter at least once a month; clean or replace the filter element if any problem is found.
- Check and clean the air cooler at least once a month.
- Do not reverse the running direction of the oil pump.
- Changing the setting of any regulating valve affects other components, including the hydraulic pump, motor, and actuator. Make changes carefully and do not exceed the system's rated working pressure.
- Monitor oil level, sound, set values, and working status during normal operation, and establish routine management checks. If an abnormality occurs, refer to this manual and on-site experience to identify the cause promptly, to keep the system operating normally and to extend its service life.
- Pay closer attention to the system during its first one to two months in service; it is best to schedule an early oil change within this period.
- Before replacing or disassembling any part, refer to the equipment's structural diagram. Hydraulic components are precision parts — take care to prevent contamination, and do not disassemble any part whose mechanism is not understood, as this can cause leaks and serious system failure.

3. Product Overview and Specifications

The SMG 7.5kW Hydraulic Power Unit is designed for petroleum pipeline equipment and meets the operating requirements of hydraulically driven pipe beveling and grooving tooling.

System Flow and Working Pressure

- System pump flow: 36 L/min
- Working pressure: 10 MPa

Motor

- Rotation speed: 1450 r/min
- Power: 7.5 kW
- Voltage: 415 V / 50 Hz, 3-phase live + earth

Oil Tank

- Capacity: 150 L
- Working medium: ISO VG46 anti-wear hydraulic oil

Structural Features

- The oil tank is a fully enclosed structure, preventing the ingress of dust and other contaminants.
- Overall protection rating of the hydraulic power unit: IP45.

4. Installation

Simple Installation Procedure

1. Open the shipping case and remove the machine.
2. Select the expanding block to suit the pipe size being worked. Read this manual completely before use.
3. Install the hydraulic motor and connect the oil pipes, then connect the power supply. Read this manual carefully before use.

Pre-Start Checks

- Check that fastening bolts, screws, flanges, pipe joints, and other connections on each component are firm.
- Check that the oil level in the tank has reached the reference level. On first commissioning, also confirm oil is present in each actuator and throughout the pipework.
- Check that the oil pump rotates in the specified direction. If the pump runs in the opposite direction, it will not draw oil, and continued running will damage the pump.
- Check that each switching element is on, and that every component is installed in the correct orientation, to prevent current interruption or overload.

5. Operation

Initial Pressure Test and Running-In

1. After confirming the oil pump rotates in the correct direction, start the pump under load and run it intermittently. Observe the pressure gauge for changes, and listen to the pump and system for abnormal sound. Only proceed to continuous running once the pump and unloading circuit are confirmed normal.

NOTE

In cold conditions, if the oil temperature is below 10°C, the oil's viscosity will make moving parts stiff and reduce lubrication. Run the pump for 10 seconds, stop for 10 seconds, then run for 20 seconds and stop for 20 seconds, repeating until all parts of the pump are fully charged with oil. Allow lubrication to distribute before running continuously.

2. Once the oil pump is running normally, the system working pressure can be adjusted. Set the pressure initially to 0.5–1.5 MPa and run continuously for 3–10 minutes. Then increase the load in stages, watching the pump's operating sound, pressure, temperature, vibration, and any oil leakage. If no abnormality is found, the pressure can be adjusted up to the specified working pressure.

Using the Remote Control / Control Box



Remote control button layout

No.	Function
1	Stop
2	Oil pump start button
3	Bevel start button
4	Increase speed
5	Reduce speed
6	Retreat

Operating via the HMI Touchscreen

Use steps:

1. After power-on, tap the screen to enter the operation interface.
2. On the selection screen, choose Local control or Remote control.
3. Before operating, press the oil pump on, then start the bevel (cutting) switch. Cutter speed is adjusted using the speed controls on screen.

NOTE

If the machine's rotation direction is incorrect, swap the position of the two oil pipes.

The operation interface displays: pump speed, real-time pressure, set pressure, pump on/off, cutting on/off, speed up/down, local/remote selection, and a homepage button.

6. Maintenance

Inspection Schedule

Item	Daily	Weekly	Monthly	3-Monthly	Half-Yearly
Oil level	○				
Oil temperature	○				
Pressure	○				
Pump sound	○				
Oil spill check	○				
Looseness of each connecting screw		○			
Oil filter cleanliness			○		
Oil condition				○	
Oil tank cleanliness					○
Replace oil					○

Users should establish inspection rules to suit their own equipment, system operation, and environment; the schedule above reflects normal operating conditions.

Working Medium — General

Most hydraulic system failures or performance issues result from poor management of the working medium (hydraulic oil) rather than the pump, valves, or other components. The working medium both transmits power and lubricates components such as pumps and valves, so it must be properly maintained.

Leaks

Check regularly for leaks and address them promptly. An undetected leak lowers the oil level in the tank and can impede pump operation. On site, leaks must be prevented to avoid contamination and fire risk, to extend equipment life, and to protect economic performance.

Oil Level

Observe the oil level gauge and keep the level near the reference mark (the tank should typically be kept 70–80% full). A significantly reduced level can cause pump cavitation, leading to air bubbles, vibration, and noise, and in turn abnormal operation, inability to work, and elevated oil temperature.

Temperature

Monitor the working medium's temperature. Low temperature increases oil viscosity, hindering pump operation and risking pump damage. High temperature reduces oil viscosity, increases internal and external leakage, and accelerates oxidative deterioration. Tank temperature must not exceed 60°C.

Periodic Inspection

Inspect all parts of the system regularly to maintain performance and extend service life. Observe fluid level, temperature, pressure, pump sound, leaks, and oil filter contamination daily, weekly, and monthly as scheduled. Regularly check that connection bolts are tight and monitor contamination in the oil tank.

Replacing the Working Medium

- First oil change: after 240 hours of operation (flushes the entire pipeline system).
- Routine oil change interval: every 4000 hours of operation.

When replacing the oil, drain all old medium from the tank (including sludge from the bottom), clean or replace the suction/return oil filter screen, then fill with new, filtered ISO VG46 anti-wear hydraulic oil to the reference level.

Oil Pump

During normal operation the oil pump runs with a clear, even sound. If any abnormal sound occurs, stop the unit, inspect, and rectify the fault before returning it to service.

7. Troubleshooting

7.1 Abnormal Oil Pump Displacement

Cause	Remedy
Pump running in reverse	Check the direction indicator and correct if needed
Oil tank level too low	Check the level; top up if low
Pump rotation speed too slow	Keep rotation speed above the specified minimum
Oil viscosity too high (oil temperature too low)	Check the oil temperature
Air accumulated in the inlet pipe	Release air via the self-draining side; rotate the pump to draw and expel air
Air leak in the input pipe	Check for a damaged gasket or a loose pipe joint
Pipe blocked / excessive flow resistance	Clear the blockage

7.2 Abnormal Pressure

Occasion	Cause	Remedy
Over pressure / too low pressure	Oil pump fault	See Section 7.1
	Pressure setting incorrect	Reset the pressure
	Relief valve spool not operating	Disassemble and clean

Occasion	Cause	Remedy
	Pilot valve not operating	Disassemble and clean
	Pressure gauge faulty	Replace
	Internal system leak	Inspect the system in detail
Unstable pressure	Dust in the oil	Clean the system or replace the oil
	Valve spool not operating	Clean or replace

7.3 Pump Too Noisy

Cause	Remedy
Oil viscosity too high (oil temperature too low)	Check the oil temperature and warm it if needed
Oil pump or fitting leak	Check, tighten, or replace
Air in the pump transmission shaft	Bleed/top up the transmission shaft with oil; replace the gasket if noise continues
Spare parts broken or loose	Disassemble and replace the affected parts
Oil pump and motor shaft not concentric	Correct to within the coaxial tolerance of $\varnothing 0.05$ mm
Air bubbles in the oil	Check the return pipe for air ingress, and check that dual oil inlet pipes are properly separated

7.4 Overheating

Cause	Remedy
Insufficient oil in the tank	Observe the level gauge or level alarm; top up if low
Oil viscosity too high	Check the medium and change to oil meeting the design specification
Valve setting different from normal	Reset
Internal leak in a valve or transmission component	Replace the affected parts or gaskets
Cooling fan not operating	Check for a tripped supply or short circuit

7.5 Leakage

Cause	Remedy
Joint loose	Tighten
Seal broken or deteriorated	Replace
Incorrect seal pressure rating	Fit a seal of the correct pressure rating

7.6 Not Working Properly

Occasion	Cause	Remedy
Valve not working	Control valve not operating normally	Check the valve body and trim; internal leakage, impurities, or rust can raise pressure — rectify as needed
Speed too low	Insufficient flow	Check the control valve and oil pump displacement; adjust or replace if not operating normally
	Pressure too low	Check the control valve and oil pump pressure for normal operation