AMAG

CNC TECHNOLOGY

OWNER'S MANUAL

MOTOR-DRIVEN LUBRICATION PUMP

TZ Type Oil Lubrication Pump

Installation, operation, and maintenance guide for the TZ Series motor-driven lubrication pump — 2L / 4L reservoir, single- or three-phase, with optional built-in dual-timer or NK-3 digital timer control.

MODEL FAMILY	RESERVOIR	RATED PRESSURE	DISCHARGE
TZ-2201 – TZ-3202	2L or 4L	1.5 MPa	110–260 ml/min

§ Contents

§ Before You Begin

Thank you for choosing the AMAG TZ Type motor-driven lubrication pump. The TZ Series is built for continuous, unattended oil delivery on CNC machining centres, injection-moulding equipment, and general industrial machinery — anywhere a centralized lubrication system needs a compact, reliable oil source.

The pump pairs with a volumetric dosing distributor (fixed-quantity delivery per outlet) or a resist-type proportionate distributor, and is available with a plain motor, a built-in dual-timer module, or the NK-3 digital-display timer for precise, tool-free interval control. Please read this manual fully before installation to get the most out of the pump and to avoid damage from incorrect wiring or pressure settings.

> **Read before wiring.** Incorrect pressure switch settings or ungrounded installation are the two most common causes of premature pump failure. Section V covers both in detail — do not skip it.

I Applications & Features

The TZ Type motor-driven pump is designed for small and medium-sized machinery across CNC, processing-line, textile, plastics, printing, chemical, woodworking, and food-machinery applications — anywhere consistent lubrication extends service life and holds machining precision.

Paired with a volumetric dosing distributor, the TZ pump delivers a fixed oil quantity to each lubrication point per cycle. Paired with a resist-type distributor instead, it delivers oil proportionally across all points. A pump fitted with a level switch and pressure switch can report pause/action state and alarms to a host controller; the optional NK-3 digital-display timer adds on-board interval control with buzzer alarm and NO/NC alarm output.

Product Features

- Fast, simple installation and wiring
- Special alloy-steel gear pump for stable output pressure, low noise, long service life
- Inadequate-liquid and abnormal-pressure detection with alarm output
- Automatic pressure take-off for full volumetric-distributor performance
- NK-3 microcomputer timer option — free interval/action-time setting, low-voltage tolerant, good interference immunity

Typical Applications

- CNC machining centres and machine tool ways/spindles
- Plastic injection-moulding machines
- Spinning and weaving machinery
- Printing presses
- Escalators and conveyors
- General light industrial equipment

II Product Specifications

MODEL	VOLTAGE	RATED SPEED	MOTOR POWER	CURRENT	RATED PRESSURE	MAX PRESSURE	VOL. EFFICIENCY	DISCHARGE CAPACITY	VISCOSITY RANGE
TZ–2201	100V	3360 rpm / 60Hz	35 W	0.3–1.2 A	1.5 MPa	2.5 MPa	≥ 75%	130 ml/min	30–1000 cSt
TZ–2202	220V	2800 rpm / 50Hz						110 ml/min	
TZ–3201	100V	3360 rpm / 60Hz						260 ml/min	
TZ–3202	220V	2800 rpm / 50Hz						220 ml/min	

Current draws between 0.3–0.6 A at light load and 0.8–1.2 A at full load across the range. Three-phase 200V and 380V motor variants are also available — see the model code reference on the next page.

III Model Code Reference

Every TZ pump model number encodes its full configuration. Use this table to decode a nameplate, or to specify a pump when ordering.

TZ – ① ② ③ – ④ ⑤ ⑥ ⑦

①	**Discharge capacity** — 2 = 100–200 cc/min · 3 = 200–300 cc/min
②	**Motor poles** — 2P
③	**Timer module** — 0 = none · 1 = built-in dual-timer · 3 = NK-3 digital-display dual-timer with press buttons
④	**Motor type** — 1 = single-phase 100V · 2 = single-phase 220V · 3 = three-phase 200V · 4 = three-phase 380V
⑤	**Oil tank volume** — 2 = 2 litres · 4 = 4 litres
⑥	**Pressure switch action pressure** — 10 = 10 kgf/cm² · 05 = 5 kgf/cm² · 00 = no pressure switch
⑦	**Pressure take-off** — X = built-in (for use with dosing volume-type distributor) · T = none (for use with resist-type distributor)

Example — **TZ-2232-410X**: single-phase 220V pump, NK-3 microcomputer dual-timer, 10 kgf/cm² pressure switch, built-in pressure take-off mechanism, 4L oil tank.

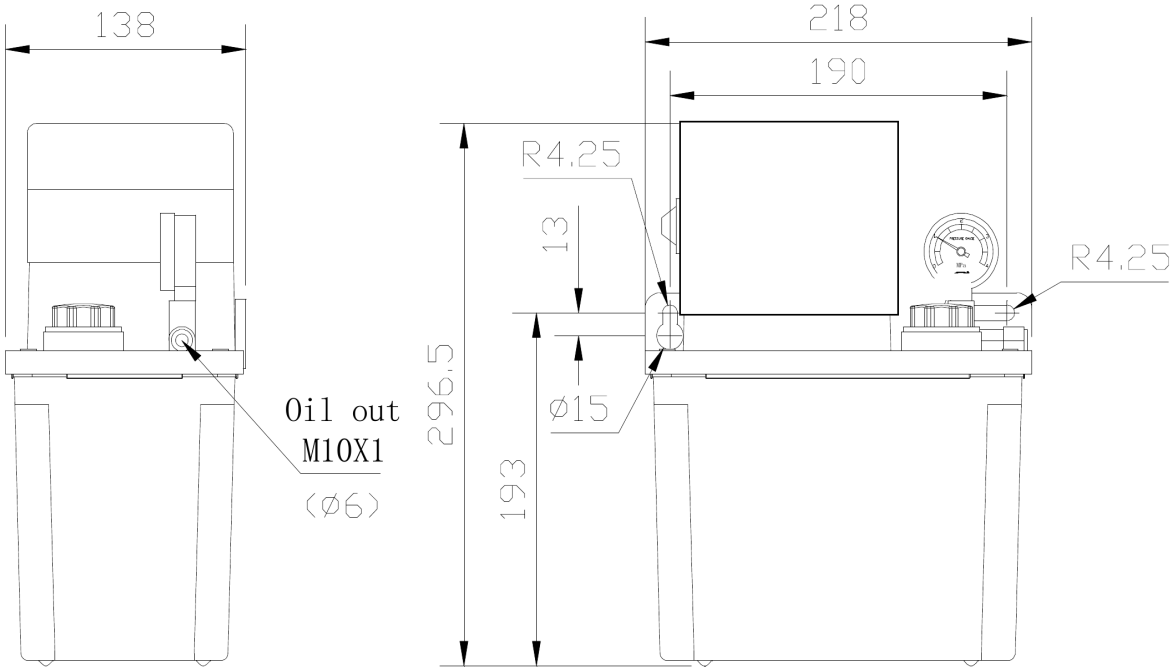
A Note on Pressure Switches

The pressure switch (where fitted) reports whether system pressure has crossed its action threshold — it is how the pump reports "charging complete" back to a host controller, and how a stalled system triggers a motor-protection alarm. Section V explains the two ways to wire it.

IV Overall & Installation Dimensions

All dimensions in millimetres. Oil outlet is M10×1 thread, for Ø6mm tube. Mounting holes are Ø15mm with R4.25 corner relief.

III. Overall and installation dimensions

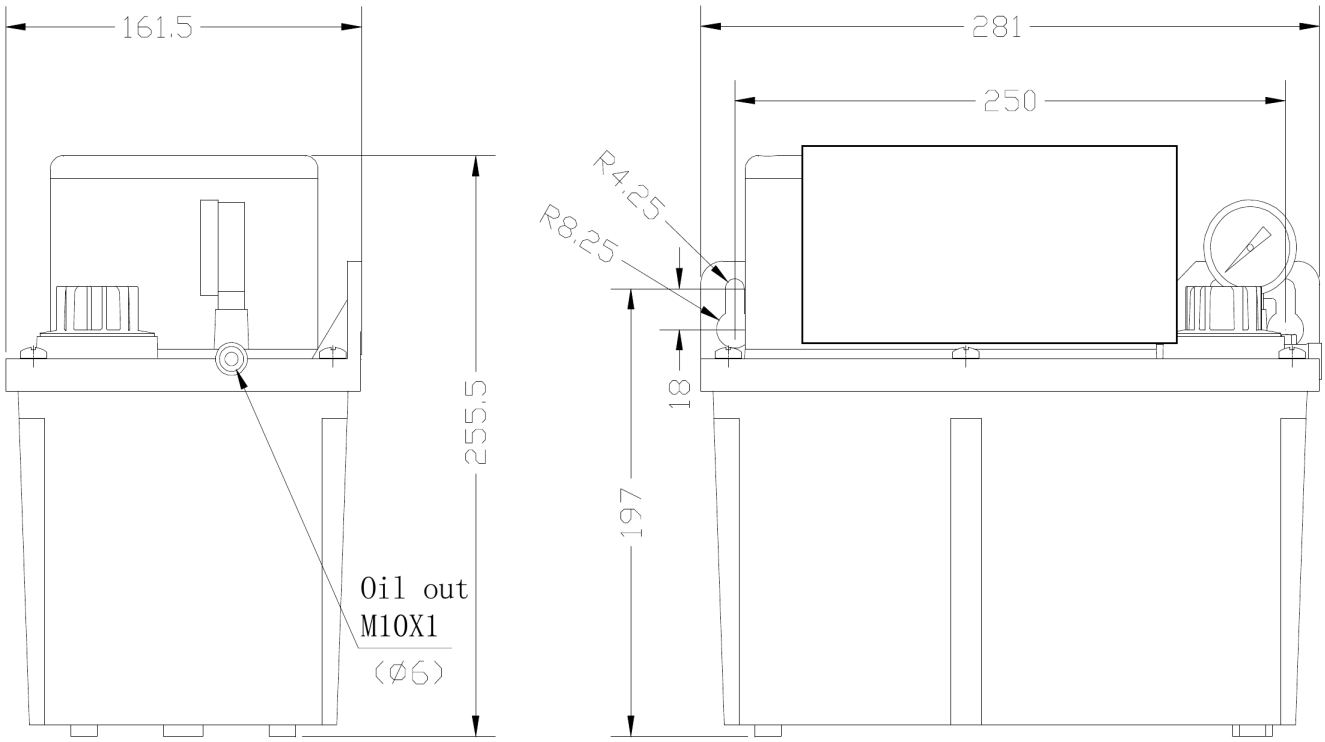


2L Lubrication Pump

3

2L RESERVOIR — 218 × 296.5 × 138 MM ENVELOPE

IV Overall & Installation Dimensions — continued



4L Lubrication Pump

4L RESERVOIR – 281 × 255.5 × 161.5 MM ENVELOPE

V Operation Instructions & Adjustment

1. TZ-2202 pump + inspection volume-type dosing distributor (external control)

1. Purchase a pump variant with built-in pressure take-off mechanism.
2. Fill the oil tank with an adequate amount of clean, unused lubrication oil.
3. Wire according to the electrical diagram on the pump's top cover.
4. **Pressure switch operation.** Action pressure is 10 kgf/cm² — the same as the distributor's action pressure. There are two ways to use it:
   a. From switch on/off state, judge whether system working pressure is above 10 kgf/cm² and therefore whether the system is operating normally. Oil-charging time is then set on the host controller: the time for system pressure to reach the rated 15–17 kgf/cm² is set as the charging time, and pause time is set from oil-consumption interval or cycle count.
   b. Alternatively, let the pressure switch itself control charging time: once action pressure (~10 kgf/cm²) is reached, a signal tells the controller to stop the pump — with roughly a 5-second stop delay built in so the full distributor dosing action completes at 15–17 kgf/cm². If pressure never reaches 10 kgf/cm², the switch cannot trip and the motor will run continuously; the controller should treat continuous running beyond ~4 minutes as a fault, stop the motor, and flag it for repair.
5. Ground the pump reliably to prevent shock or fire.
6. Power on for inching/pre-oiling: bleed all air from the system and confirm no leaks before every lubrication point shows oil out.

> **Note.** On every charging cycle, system pressure must reach at least 1.5 MPa, and the distributor's signal pins should extend at every outlet — otherwise check system pressure and the distributor pistons. If pressure is normal but a signal pin doesn't extend: shut off pump power, remove the tank, loosen the locking nut on that outlet's copper connector, turn the adjustment bolt clockwise until pressure exceeds 1.5 MPa, then re-lock. If pressure is normal and above 1.5 MPa but the pin still doesn't extend, disassemble that connector and replace the seal, connector, or piston.

2. TZ-2202 pump + resist-type proportionate distributor

1. A pump without pressure take-off mechanism is normally used here (though the take-off variant also works).
2. Fill the oil tank with clean, unused lubrication oil.
3. Wire according to the electrical diagram on the pump's top cover.
4. System pressure in this configuration is low — typically 2–5 kgf/cm² — so a pressure switch is usually omitted. Set oil-charging time on the host controller based on actual charging behaviour, and pause time from oil-consumption interval or cycle count.
5. Ground the pump reliably to prevent shock or fire.
6. Power on for inching/pre-oiling, bleed all air, confirm no leaks, and adjust distributor oiling proportion until every point shows oil out.

3. TZ-2202 pump with built-in dual-timer + inspection volume-type dosing distributor

1. Purchase a pump variant with built-in pressure take-off mechanism.
2. Fill the oil tank with clean, unused lubrication oil.
3. Wire per the diagram included with the manual.
4. If fitted, the pressure switch handles pressure detection and alarming directly.
5. Ground the pump reliably to prevent shock or fire.
6. Set action (charging) time and pause (intermittent) time on the built-in dual-timer:
   a. Check the intermittent/charging-time reference chart inside the pump's top cover. The switch handle's "ON" position corresponds to code "1"; the "12345678" position corresponds to code "0" — together these give the current code for the set interval or charging time.
   b. Power on and press the reset switch repeatedly to charge oil and bleed all air; confirm no leaks and oil out at every point. Set charging time longer than the time it takes for every distributor outlet's signal pin to fully extend — i.e. the time for system pressure to reach the rated 1.5 MPa — at which point the pump stops for pressure take-off and the distributor injects its stored oil to the branch lines.
   c. Once charging time is confirmed, set the intermittent time from the same reference chart, typically 15 minutes to 4 hours depending on the duty of each lubrication point.
7. Power on and the timer module runs the set schedule automatically.

4. TZ-2202 pump with built-in dual-timer + resist-type proportionate distributor

1. Purchase a pump variant with built-in pressure take-off mechanism.
2. Fill the oil tank with clean, unused lubrication oil.
3. Wire per the included diagram.
4. Pressure in this configuration is low (2–5 kgf/cm²), so a pressure switch is usually omitted; set charging time on the built-in timer from actual charging behaviour, and pause time from oil-consumption interval or cycle count.
5. Ground the pump reliably to prevent shock or fire.
6. Power on, bleed all air, confirm no leaks, adjust distributor proportioning, and charge until every point shows oil out.
7. Power on and the timer module runs the set schedule automatically.

5–6. TZ-2232 NK-3 digital-display pump + volume-type or resist-type distributor

Setup follows the same sequence as above (fill tank, wire, ground, bleed air) with timing handled on the NK-3 digital-display module instead of a plain dual-timer.

VI NK-3 Digital Timer Reference

Panel Indicators

- **Yellow** — system in setting/reset state
- **Green** — system in oil-feeding state
- **Red** — system in interval (pause) state

Specification

- ACT (action) time — 1–999 seconds
- INT (interval) time — 1–999 minutes
- Control relay output — AC 250V, 5A
- Failure relay output — AC 250V, 0.5A
- Working voltage — AC 250V ±20%, 50Hz

Alarm Codes

- **EraP** — pressure inadequate (pumps without a pressure switch do not raise this alarm)
- **ErO** — oil level not high enough
- **ErS** — overtime system operation

Setting Procedure

1. Hold **SET** for 2 seconds to enter ON-time setting — the SET and ACT lights illuminate. Use ▲/▼ to set ACT time, then hold **SET** again to enter OFF/INT setting and repeat.
2. Hold **SET** for 2 seconds to confirm — the system immediately begins cyclical operation on the new schedule.
3. On alarm, clear the fault and press the reset button to resume the set schedule.

> **Setting oil-charging time.** The set charging time must be longer than the actual time it takes every distributor outlet's signal pin to fully extend — i.e. the time for system pressure to reach 1.5 MPa. At that point the pump stops for pressure take-off and the distributor injects stored oil into the branch lines and lubrication points. Set intermittent time from each point's duty cycle — typically 15 minutes to 4 hours.

VII Maintenance

1. Use clean lubrication oil and keep it clean for the life of the system.
2. Check and clean the oil tank and intake filter every month to prevent inadequate discharge or pressure from a blocked filter.
3. Do not adjust the escape (relief) valve above 2.5 MPa — higher settings shorten pump service life.
4. Check daily that the system charges oil on schedule. If the timer fails and the motor keeps running, stop it immediately to prevent motor damage.
5. Never open the pump cover while powered on — risk of electric shock or fire.

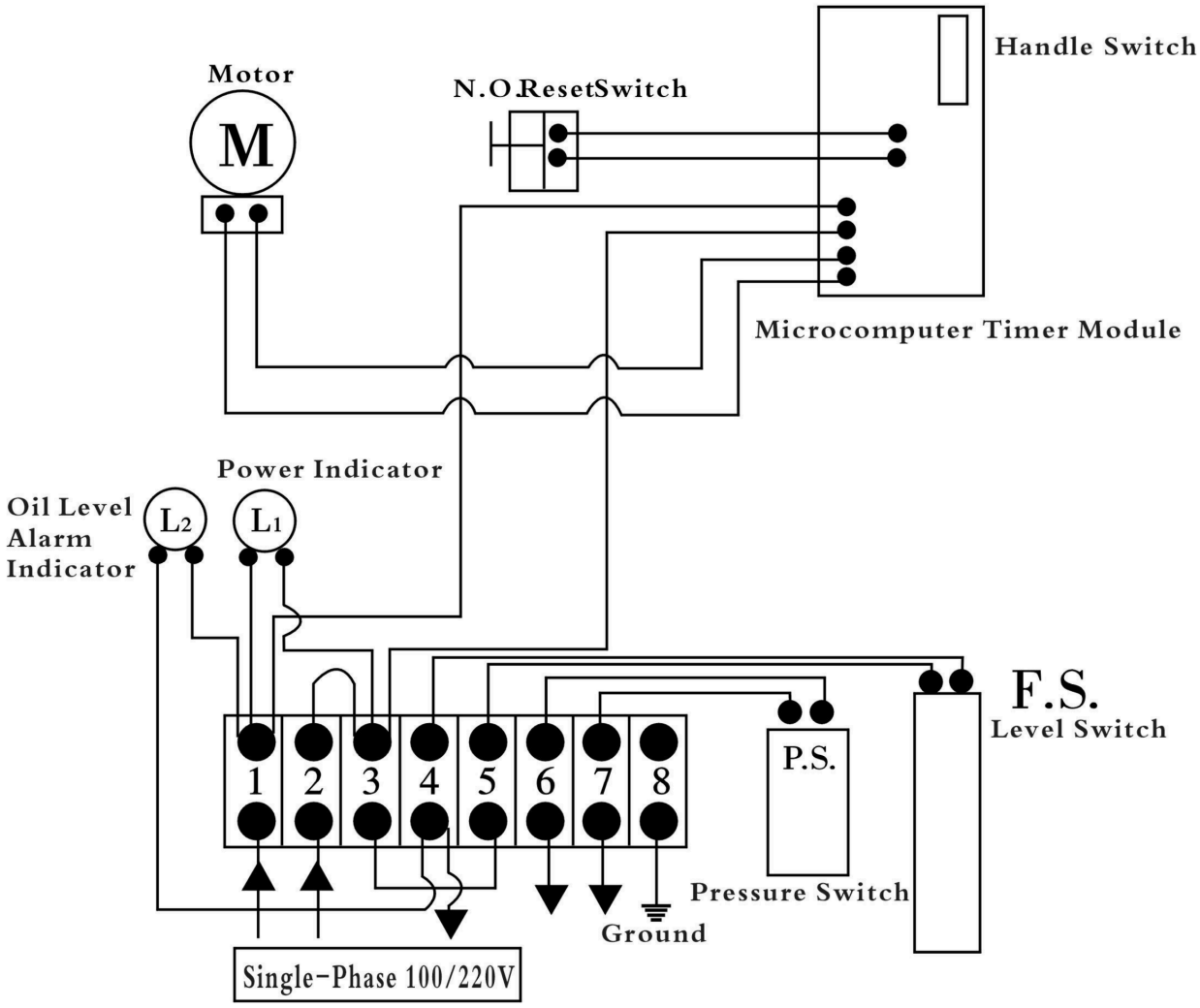
VIII Troubleshooting

#	SYMPTOM	LIKELY CAUSE	REMEDY
1	Motor does not run	Wrong voltage	Correct the supply voltage
		Wrong wiring	Rewire to the electrical diagram
		Gears jammed by fine debris	Have the gear pump disassembled and cleaned by a professional
2	Inadequate pressure	Pressure gauge damaged	Replace the gauge
		Main oil pipe leaking	Locate and fix the leak
		Reversal valve fault at branch tube	Check and replace the reversal valve inside the distributor
		Escape valve not sealed	Disassemble and clean it
3	No oil discharge	Air not fully bled	Pump several more times; loosen the outlet first if needed
		Motor not running	See item 1
4	Inadequate discharge	Suction entry blocked	Clean the suction filter
		Overflow valve not sealed	Disassemble and clean it
5	Pressure switch inactive	System pressure too low	Confirm pipeline pressure exceeds 10 kgf/cm²
		Wrong wiring	Rewire to the electrical diagram
6	Level switch inactive	Float touching tank wall	Reposition the level switch
7	Timer motor won't stop	Charging time set too long	Re-set charging time correctly
		Digital timer misconfigured	Re-set charging time correctly

IX Packing List

ITEM	SPEC	QTY	REMARKS
Lubrication pump	—	1 set	
Bolt	M8 × 16	2 pcs	
Washer	M8	2 pcs	
Owner's manual	—	1 copy	This document

Electrical Diagram — dual-timer models (TZ-221X / TZ-321X)



§ Need Help?

If you run into an issue that this manual doesn't resolve — an unusual symptom, a spec you need confirmed, or a part number for a replacement fitting — our team can help directly. Have your model number and, if possible, a photo of the pump's nameplate ready when you reach out.

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