

BINKS[®]

Instruction Manual

For

Maple 15 - Pump

Model 104009

**BINKS**

Product Description

Pumps - Maple, , AX260, AX320, FX190,
FX220, FX440, FX880, DVP, 104027,
104032, 104077, 104025, 104023,
104028, 106933,

This Product is designed for use with: Solvent and Water based Materials

Suitable for use in hazardous area: Zone 1 & 2

Protection Level: II 2 G X T4

Manufacturer: Binks,
Justus-von-Liebig - Strasse,
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EU Declaration of Conformity

We: Binks declare that the above product conforms with the Provisions of:
Machinery Directive 2006/42/EC
ATEX Directive 94/9/EC

by complying with the following statutory documents and harmonized standards:

EN ISO 12100: Safety of Machinery - General Principles for Design
EN ISO 4413: Hydraulic Fluid Power - General Rules and safety requirements
EN ISO 4414: Pneumatic Fluid Power - General Rules and safety requirements
EN 12621: Machinery for the supply and circulation of coating materials under pressure - Safety requirements
EN1127-1: Explosive atmospheres - Explosion prevention - Basic concepts
EN 13463-1: Non electrical equipment for use in potentially explosive atmospheres - Basic methods and requirements
EN 13463-5: Non electrical equipment for use in potentially explosive atmospheres - Protection by constructional safety

Providing all conditions of safe use stated within the product manuals have been complied with and that the final equipment into which this product is installed has been re-assessed as required, in accordance with essential health and safety requirements of the above standards, directives and statutory instruments and also installed in accordance with any applicable local codes of practice.

D Smith (General Manager)
01 November 2012

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General Description – Section 1.1

High Quality materials and surface treatments are used in the construction of this pump to ensure both extended operational life and good future appearance.

The Maple pump is a horizontal piston pump for pumping Solvent / Waterborne Paints, Solvents and other suitable materials.

An Ø125 x 50mm stroke air motor is used to drive two fluid sections giving a combined output of 0.375 L per cycle.

The unit combines an energy efficient air motor with low shear fluid section technology from the range of Smart Electric Pumps.

The Maple Pump achieves a reciprocating drive by using high technology ground and lapped steel spool and sleeve air valves to control the air motor reversal, providing reciprocating motion.

The air valve design (patent pending) ensures a positive magnetic detent for the main and pilot air valves thus removing the possibility for a stall condition.

The air motor also utilises the Binks Low Ice quick exhaust technology to prevent air valve freezing conditions when high cycle speeds are employed.

Equal thrust on each stroke due to the horizontal configuration incorporating the dual piston rod design gives a balanced fluid pressure output and reduces fluid pressure fluctuations to a minimum.

The air pump is furnished with twin exhaust mufflers to control exhaust noise emission. An adapter kit is available to facilitate connection to a piped exhaust system if required.

A 1/8" Port is incorporated into the main air valve to facilitate an optional cycle counter.

Complies with current relevant European and US Legislation

Operating Principle – Section 1.2

The Assembly comprises of:-

- Central Air Piston and 'change over' Valves
- 2 off Quick Exhaust and muffler assembly
- 2 off Dynamic Chambers and Fluid Pistons
- 2 off Fluid Pressure Chambers each complete with Suction and Pressure Ball Check Valve Assemblies
- 1 off Fluid Inlet Manifold
- 1 off Fluid Outlet Manifold
- Support Bracket

The Pumps have horizontally opposed positive displacement pistons connected to a common reciprocating air motor piston. The pneumatically driven piston actuates pilot air control valves at the end of its travel producing an air logic signal to shuttle the spool valve initiating the opposite stroke.

The air pilot valves contain no springs. They are operated by magnetic force and reset by the main piston air supply and retained in position by a magnetic detent. The main spool valve is air piloted and contains two exhaust ports. Both the pilot valves and the main spool valve are easily removable.

There are no external air pilot hoses. The air logic and exhaust ports are internal. Simply mounting the spool valve and the pilot valves assures that the logic circuits are connected properly.

The air cylinder exhaust air is channelled through two independent quick exhaust valves to minimise piston reversal time.

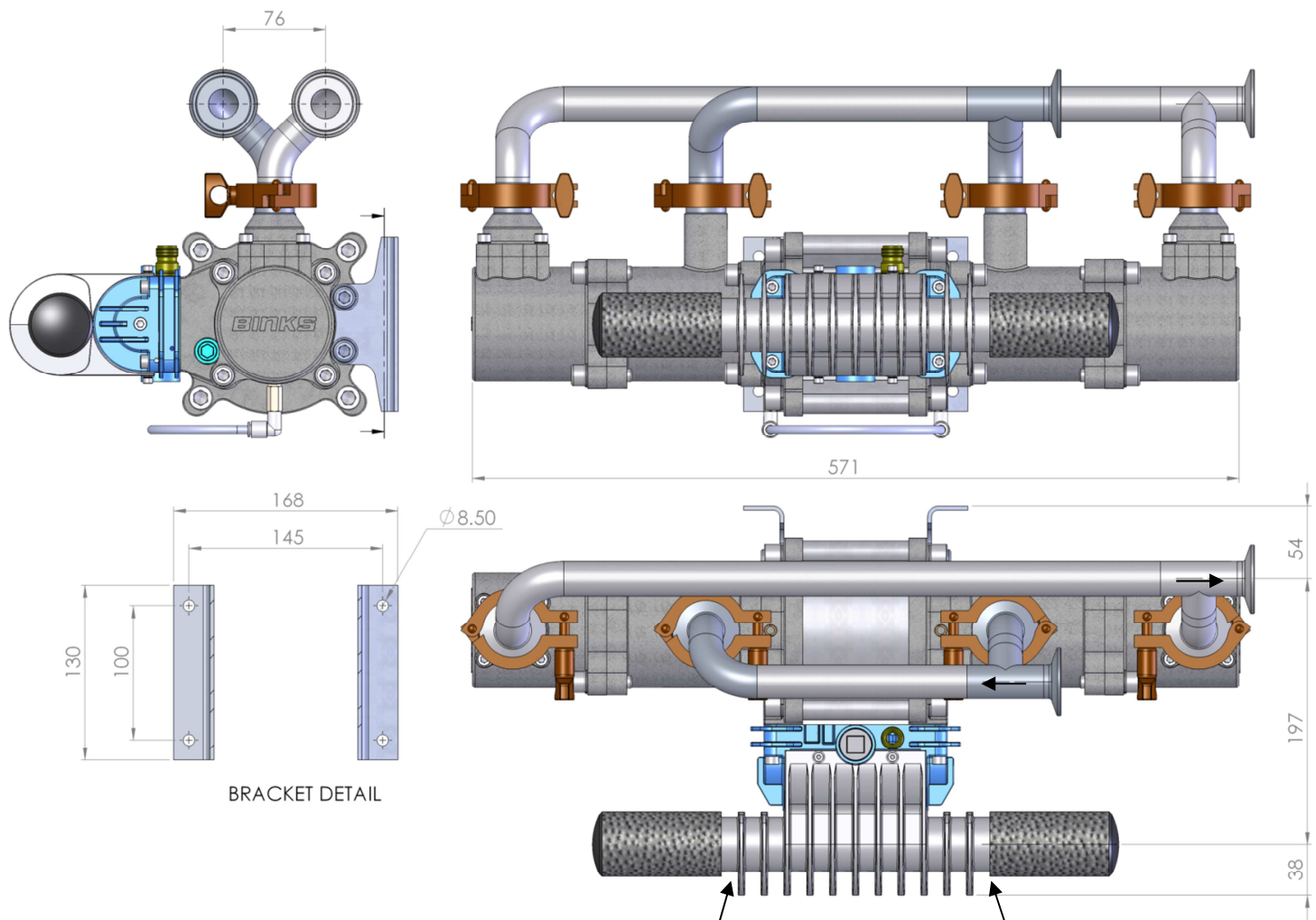
The "4-Ball" fluid section design refers to the two sets of ball checks. Each fluid chamber has an inlet and outlet ball check, the inlet check is uniquely positioned in the piston saving space and reducing the overall weight of the pump. The inlet and outlet ball checks are connected by a common inlet manifold and outlet manifold respectively.

A bellows provides the fluid seal on the connecting rod within the inlet chamber, whilst a main piston seal maintains the pump fluid pressure within the pressure chamber. When the main piston seal starts to pass fluid due to wear, any leakage passes into the inlet chamber.

Specification – Section 1.3

Specification	
Pump Nominal Stroke	50 mm 1.97 ins
Pump Ratio	3:1
Nominal Flow Volume / Cycle	0.375 Litres 0.10 US Gall
Fluid Output @ 60 cycles/min	22.5 Litres / min 6.0 US Gall / min
Maximum Recommended Continuous Cycle Rate Maximum Recommended Intermittent Cycle Rate	20 Cycles /min 40 Cycles /min
Fluid Inlet / Outlet Connections	1" Sanitary
Air Volume / cycle	0.17 SCFM (4.8 L/m) @ 45PSI (3.1 Bar) 0.33 SCFM (9.3 L/m) @ 90 PSI (6.2 Bar)
Air Flow @ 15 cycles/min 6 bar Air Flow @ 30 cycles/min 6 bar	5 CFM (142 L/min) 10 CFM (283 L/min)
Air Quality ISO 8573.1 Class 3.3.2 # See Note	Dirt 5 microns Water -20°C@7bar (940ppm) Oil 0.1mg/m ³
Total Weight of Pump	21 Kg 46 Lb
<p># Note: Class 3.4.2 Air Quality (Refrigerant dried - water +3°C@7bar) may be used, however, above 15 cycles/min optional heavy duty mufflers 192821 or piped exhaust system should be used.</p>	

Dimensions and Mounting Details – Section 1.4



For Piped Exhaust Air, remove mufflers and add 192803 Plug and Adapter 192779 for 1" NB Hose

Important Safety Information - Section 2.1

Directions for Working Safety

This Product has been constructed according to advanced technological standards and is operationally reliable. Damage may, however, result if it is used incorrectly by untrained persons or used for purposes other than those for which it was constructed.

The locally current regulations for safety and prevention of accidents are valid for the operation of this product under all circumstances.

International, national and company safety regulations are to be observed for the installation and operation of this product, as well as the procedures involved in maintenance, repairs and cleaning.

These instructions are intended to be read, understood and observed in all points by those responsible for this product. These operating and maintenance instructions are intended to ensure trouble free operation. Therefore, it is recommended to read these instructions carefully before start-up. Binks cannot be held responsible for damage or malfunctions resulting from the non-observance of the operating instructions. These instructions including regulations and technical drawings may not be copied, distributed, used for commercial purposes or given to others either in full or in part without the consent of Binks.

We reserve the right to alter drawings and specifications necessary for the technical improvement of this product without notice.

High Pressure/Electrostatic Warning

High pressure equipment can be dangerous if used incorrectly, serious bodily injury may occur if the following instructions are ignored. Installation and maintenance should only be carried out by suitably qualified personnel.

1. Before attempting any work on a high-pressure system ensure material pump, hydraulics, compressed air motor are isolated where relevant.
2. Relieve all pressure from the system. Note: It is possible for pressure to get locked into a system, therefore, ensure all sections of the system are checked thoroughly for remaining pressure.
3. Take care when releasing fittings
4. Always replace worn hoses immediately
5. Never plug a leak with your finger, adhesive tape or other stop gap devices

Always ensure equipment is suitably earthed before running, to avoid any chance of electrostatic build up.

Equipment Misuse Hazard

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose.
- Do not alter or modify this equipment. Use only genuine Binks parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure stated on the equipment or in the Technical Data for your equipment. Do not exceed the maximum working pressure of the lowest rated component in your system.
- Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the Technical Data section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose hoses to temperatures above 82°C (180°F) or below -40°C (-40°F).
- Wear hearing protection when operating this equipment.
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

Important Safety Information - Section 2.1

Fire, Explosion and Electric Shock Hazard

Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire, explosion, or electric shock.

When installed and operated in accordance with its instructions, the pump is approved for operation in Zone 1 (Europe) & Division 1 (North America), hazardous locations. (ATEX Cat 2)

- Electrical equipment must be installed, operated, and serviced only by trained, qualified personnel who fully understand the requirements stated in this instruction manual.
- Ground the equipment and all other electrically conductive objects in the spray area. After grounding test with ohmmeter to ensure earth continuity is 1 ohm or less.
- Keep all covers tight while the motor is energized.
- If there is any static sparking or you feel an electric shock while using this equipment, stop spraying/dispensing immediately. Do not use the equipment until you identify and correct the problem.
- Provide fresh air ventilation to avoid the build up of flammable fumes from solvents or the fluid being pumped.
- Keep the pumping area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the pumping area.
- Extinguish all open flames or pilot lights in the spray/dispense area.
- Do not smoke in the spray/dispense area.
- Do not turn on or off any light switch in the spray/dispense area while operating or if fumes are present.
- Do not operate a gasoline engine in the spray/dispense area.

Hot Surface Hazard

- The electric motor becomes hot during operation, and the heat may be transferred to other connected equipment. To reduce the risk of burning yourself, do not touch the motor surfaces while it is operating. Before servicing, allow the motor to cool.
- Keep flammable materials and debris away from the equipment.

Pressurized Equipment Hazard

Spray from the gun/valve, hose leaks, or ruptured components can splash fluid in the eyes or on the skin and cause serious injury.

- Do not point the gun/valve at anyone or at any part of the body.
- Do not stop or deflect leaks with your hand, body, glove or rag.
- Spraying/dispensing; clean, check, or service the equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.

Toxic Fluid Hazard

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

Moving Parts Hazard

- Keep clear of all moving parts when starting or operating the pump.

Installation – Section 3.1

Mount the pump securely and position the pump at a convenient height (below the lid height of the paint container), to allow for maintenance, visual observation, and periodic inspection.

The wall mount bracket is included with all pumps.

Exhaust silencer kits are available for these pumps if the air exhaust is required to be piped away from the pump rather than exhausting locally through the mufflers.

The Pump Mounting Frame must be connected to a suitable earth ground to ensure that there is no possibility of static build up.

Attach suitable flexible hoses (20 bar working pressure) to the inlet and outlet connections. e.g. 25 mm NB Inlet and 25 mm NB Outlet hose.

Connect a suitable 3/8 NB air hose and 1/2" Pressure Filter Regulator to the air motor. (Filter rated at minimum 1000 L/min)

No additional air lubrication is required as piston o-ring lubricant is applied during assembly or repair. If an air lubricator is used to prolong piston seal life (for example continuous duty at high pump cycle rates) then this must be maintained as the lubricant removes the piston seal assembly grease.

Set the pump speed to a slow cycle rate and start the pump to remove any air from the fluid circuit. Inspect for any air or fluid leaks.

Set the pump cycle rate to achieve the required paint volume and then adjust the system back pressure regulator and pump air pressure to achieve the desired system fluid pressure.

A Back Pressure Regulator should be mounted in the paint system return line. The return line 'back pressure' regulator responds to the changes in system fluid flow demand, (due to variable paint usage) by dynamically adjusting the paint flow rate returning to the system paint tank, thus maintaining the set pressure.