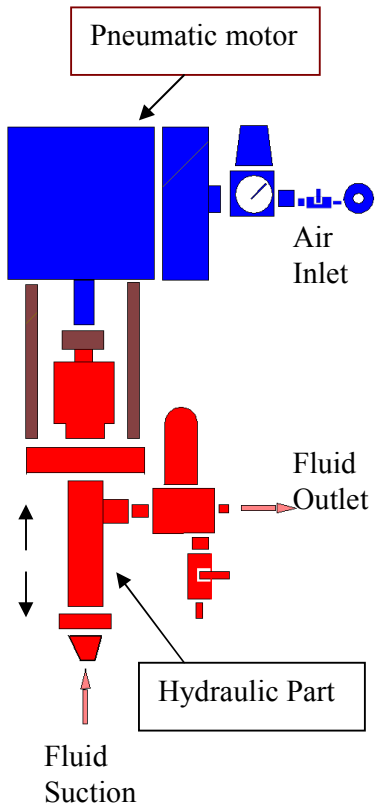
OPERATING INSTRUCTIONS



GENERAL DESCRIPTION:

Pneumatic piston Pumps are made for spraying, dispensing, and transferring of various types of liquid/semi solid. Theses pumps are mainly used for airless/air assisted spraying of coating materials and dispensing /transferring of paints, oil, ink, sealants adhesives, wax, grease, solvents etc. and incorporate the following essential parts:

Airless Pump : Pneumatic motor with Control Unit, Hydraulic parts, Suction device, mounting plate etc.

Accessories: HP (High Pressure) hose, HP Filter, Trolley, Spray gun, Spray nozzle etc.

Optional : Circulating unit, special accessories depending on applications.

The various pump versions are identified as follows:

e.g.: TIGER 30.150

Double stroke Volume in CC (150) and transmission or pressure ratio 30:1.

The above is intended to obtain the following data:

Material Pressure :Pressure Input x Transmission Ratio

Displaced Volume :Double Stroke Volume x No. of double stroke/ min.

The pump works double acting and self-priming and serves to transfer the material to the gun by making it pass through a filter and a high pressure hose. Its differential piston and cylinder, which is located in the hydraulic portion of the pump, moves upwards and downwards in the working cylinder (1 cycle = 1 double stroke = 1 upward and 1 downward stroke). The displacement piston and cylinder features a layer of hard chrome of about 200 microns to protect against wear. The suction and delivery valve feature tungsten carbide seat. The pump is equipped with an oil cup containing a solvent, which is intended to lubricate the piston and to prevent paint residues from incrustation. The packing need to be readjusted manually by tightening the upper packing take up nut which is designed as oil cup.

As the pump is driven by compressed air motor, noise, at the air exhaust due to sudden expansion of the compressed air, normally does not exceed 91db in case of Rhino and 81db in case of Tiger range pump but necessary risk assessment and hazard analysis shall be done and necessary safety measures

shall be deployed at workplace if required.
The actual spray performance depends on both spray nozzle size and selected spray pressure; increased material flow results in both spray nozzle size and air consumption.

Make sure that pump does not work too fast and / or too long when idling in order to prevent damage to sealing and valves.

All airless spraying units are equipped with capacity sieving filters. There are different mesh sizes to match according to the airless nozzle. Please see Nozzle Chart for appropriate type of nozzle.
In case of high delivery transfer pumps separate filters cartridge type or bag type can be used. Filter size depends upon the fluid, which is handled, and application requirements.

ACCESSORIES

A flexible HP hose serves as connection between pump and spray gun. Its inside wall consists of either Nylon or Teflon; it also contains an electrical conductor in order to permit electrostatic charges to discharge through the grounded pump.

⚠ WARNING

COMPONENT RUPTURE The system is capable of producing high pressure; all components in the system must have a maximum working pressure capacity not less than the pressure rating of the pump.

A large number of different nozzles are available. See Nozzle Chart**.**

HANDLING

Eyehook is provided on the top of Air Motor in case of Rhino Pumps to lift the equipment while handling. Weight of the machine displayed on Air Motor.

MOUNTING

Any pumping unit should be installed in a way to make it easily accessible for cleaning and maintenance purposes.

In the case of wall mounting, assure that pump is vertically installed and fastened by using the holes on the mounting plate. All pumps are equipped with a grounding point. It is compulsory that the ground lead be connected to this point.

⚠ WARNING

High velocity flow of material through equipment may create static electricity. All equipment being sprayed must be properly grounded to prevent sparking, which may cause a fire or explosion.

Make sure that sufficient compressed air is available when connecting the pump to the air supply inlet.

COMMISSIONING AND OPERATING

1. General Information

Present pump is suitable for any kind of coatings/ material such as primers, basic coats, lacquers, dispersion paints, caustics, bituminous mastics etc.,

Depending on their physical and chemical characteristics, other types of spray media can be used e.g. cements, fillers, deadening agents and so forth.

Two component paints, PU material, PES material, acid hardening material or other media containing filler such as asbestos, ground cork and silicates require special attention prior to use.

We do not recommend the application of coarse bodied or aggressive fluids using the airless method. These would include sand filled wall coatings, coatings with coarse fibrous, various types of adhesives.

⚠ WARNING

Do not process flammable, explosive, toxic or otherwise hazardous materials without first performing an appropriate hazard analysis.
It is compulsory to
-know the product and possible hazards.
-store the product to be used in the appropriate areas.
-keep the product used during dispensing in a suitable container.
-Dispose the product according to the regulation of hazardous products in force in the country where the product is used.
-Wear protective equipment designed for that use.
-wear glasses, gloves, shoes, clothes and mask for breath.

2. In case of doubt, please contact for correct equipment recommendations.

Setting up

- Hold oil cup/coupling guard by hand and push downwards in versions provided with this type of guard. In bolted guard versions open the guard cover with allen key.
- Check for top lubricant to maximum level in pump lubrication chamber or oil-cup or packing take-up nut.
- Lift oil cup guard in upward direction till it locks in ball catch. In bolted guard versions fix the guard cover in position with screw driver.

FINGER OR HANDS PINCH HAZARD. KEEP HANDS CLEAR. Before servicing/removing any part always shut off power source and release pressure in fluid portions of the system.
Ensure coupling guard is always at closed position while pump is working.

- Check high-pressure filter screen element. Mesh opening should be smaller than bore tip size used.
- The Table below should be used as a guideline only. We suggest that you do not use any filter element when spraying materials containing fibrous.

Mesh size an element marking (opening)	**Tip size**	**Coating material to be sprayed**
M 200 (0.084 mm/ 0.0033’’)	< 0.3 mm 0.011”	Clear lacquers, varnishes, and hammer tone.
M 150 (0.099mm/0.0039”)	>0.3 mm 0.011’’	Primer, filler, red oxide.
M 100 (0.145mm/0.0057)	>0.3 mm 0.011’’	Primer, filler, red oxide.
M 70 (0.250 mm/0.0098”)	>0.5 mm 0.016’’	Iron mica, red oxide.
M 50 (0.320 mm/0.0125”)	>0.6 mm 0.023’’	Latex paint, bodied coatings.

- Connect high-pressure fluid hose and gun and connect air supply to air regulator.

⚠ CAUTION

Have Trigger Lock engaged at all times when not spraying/in use.

4. Flushing

The unit has been factory tested using an oil emulsion. To avoid contamination of the coating material to be sprayed, be sure the emulsion is flushed from the system before spray operation begins by using a compatible solvent. Do as follows:

- Close main air supply valve and back-off air regulator.
- Close drain valve located at high-pressure filter manifold.
- Insert suction hose and tube or fluid end into compatible solvent.
- Place drain hose from filter manifold into container, open Drain Valve.
- Open main airs supply valve and slowly open-air regulator to max. 2 bar (30 psi).

Note: Pump cycles slowly and circulates fluid via drain hose back into the container.

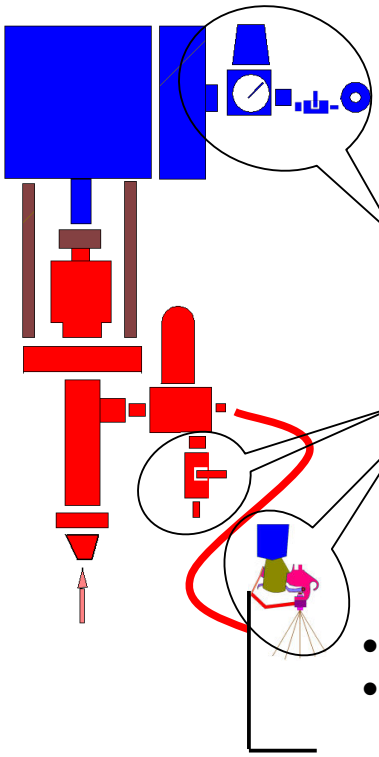
- Close Drain valve located at high-pressure filter manifold. Point gun into container ensuring contact between gun and metal container-then trigger the gun.

⚠ CAUTION

FLUSHING/CLEANING

Always flush the unit into a separate metal container with the spray tip removed and the gun held firmly against the side of container to ensure proper grounding and prevent static discharge which could cause serious bodily injury.

- Close gun and increase air regulator setting to maximum pressure allowed. Check all connections for leaks.
  Note: Maximum fluid pressure will vary according to the model of pump selected.
- Close main air supply valve and back-off air regulator.
- Open drain valve at high-pressure filter manifold to relieve system pressure completely. Finally trigger the gun again shortly to ensure that there is no pressure retained in the fluid hose.



PRESSURE RELEASE PROCEDURE

A **Set trigger safely in a locked position.**

B **Shut off pump(Close main air supply valve and back-off air regulator).**

C **Release fluid pressure from entire system**
Open drain valve and
trigger gun.
D **Reset trigger safely in a locked position.**

Change solvent to be compatible with the next fluid to be sprayed.

Spray Pattern Control

- Follow procedure as listed under “FLUSHING”.
- Immerse head of spray gun only into solvent and wipe off clean. Install spray tip.

⚠ CAUTION

Have Gun **Trigger Lock** engaged at all times when not actually spraying.

When installing **spray tip** be sure that **Gasket** is correctly used between gun tip and spray tip. With Gun in the "**Open"** (triggered) position, increase the air regulator setting until the correct spray pattern is achieved.

Note: Use the lowest air pressure possible that will give proper fluid atomization and spray pattern. Excessive or higher pressures show no improved result, but will cause reduced system component life, and will waste material.

6. Colour Change

Relieve air regulator pressure. Close off the main air supply.

- Remove spray tip.
  Caution: Have Gun **Trigger Lock** engaged at all times when not actually spraying
  Note: It is suggested that spray tips be immersed in compatible solvent in a suitable container for convenience and to prevent coating materials hardening.
- Remove suction hose and tube or fluid end from material container, wipe clean.
- Point gun into the container, ensuring good contact with the container Trigger the Gun.
- Open air regulator slowly to max. 2 bar (30 psi).
  Note: It is suggested that, several flushing operations be undertaken using small amounts of solvent rather than a few using large amounts of compatible solvent.
- Follow Procedure as listed under "**Spray Pattern Control**".

POST-OPERATIONAL HANDLING:

Actuate gun in order to evacuate pressure from pump. Remove nozzle and clean it.
Lacquer may remain in the pump up to 48 hours. This should however be avoided when using two component materials or any other material liable to self-cure quickly.
Incase of protracted downtimes, evacuate pump, refill with solvent and leave as such. Clean HP filter if necessary.

- **Shut Down Procedure**
  Follow Procedure as listed under "**Color Change**".
  Follow Procedure as listed under "**Flushing**", however use regular **Recommended lubricating oil** without additives instead of solvent, if the pump is to be put into storage.
  Back-off (relief) air regulator completely.
  Close main airs supply valve.

MAINTENANCE:

- The operating conditions of your particular system and paint characteristic determine how often maintenance is required. By recording when & what kind of maintenance is needed, establish a preventive maintenance schedule and then determine a regular schedule for checking your system.
- Daily - if compressed air is wet - drain oil and water separator with pressure on and blow out water at least twice daily.
- Check fog oiler for correct adjustment (droplet metering) and oil s level. Refill if required.
  Note: Severe operating conditions may cause frosting of Air motor. To prevent, fill fog oiler with mixture of 50:50 regular recommended lubricating oil and Glycol.
- Check or top-up the level of lubricant in pump packing oil cup nut.
  Note: Tighten the oil cup nut and change lubricant every 50 hours of operation. Discoloration of lubricant indicates packing wear or failure. This will affect pump performance. Tighten the oil cup nut and if necessary, renew upper packing set.
- Clean and inspect filter elements in filter screen housing and high-pressure filter at least daily, based on quality of product to be sprayed.
- Do not kink or bend high-pressure fluid hose to less than four-inch radius.
- Loosen threaded connections or hose couplings of the unit or system only when essential. This will help prevent hardened materials getting into the system, which could malfunction.

- Displacement piston in lowest (DOWN) position at all times to prevent material from hardening on the fluid piston or rod.

TROUBLE SHOOTING

MALFUNCTION	Pump does not start/stops during operation	Pump does not suck or only insufficiently	Spray pressure too low	Pump operates irregularly	Pump operates although spray gun is closed	Pump transports material into the rinsing agent	Regulator frozen
AIR MOTOR	Clean regulator, replace defective parts if necessary		Clean regulator, replace defective parts if necessary				Compressed air too moist, stroke frequency too high, ambient temperature too low.
HYDRAULIC PART		Loose suction connection		Ventilated, loose suction connection	Not sufficiently ventilated, loose suction connection		
SUCTION AND TRANSFER VALVE		Worn or blocked, replace defective parts		Worn or blocked, replace defective parts	Replace worn or defective parts		
PACKINGS		Leaking piston end packing		Leaking piston end packing		Leaking upper packing	
FILTER	Filter mesh blocked, check where and clean out	Filter mesh blocked, check where and clean out	Filter mesh blocked, check where and clean out		Drain valve open.		
COMPRESSED AIR LINE	Volume flow too low, air pressure too low.		Volume flow too low, air pressure too low.				
PRESSURE REGULATOR VALVE (AIR)	Air pressure too low		Air pressure too low				
MATERIAL HOSE	Blocked, check where and clean out	Blocked, check where and clean out	Blocked, check where and clean out				
ATOMIZER	Orifice of spray gun blocked		Orifice spray too large				
MATERIAL BEING USED	Viscosity too high	Viscosity to high	Viscosity too high				