

# WARNING AND SAFETY INSTRUCTIONS

EQUIPMENT IS FOR PROFESSIONAL USE ONLY

## ⚠ WARNING



**HIGH PRESSURE DEVICE FOR PROFESSIONAL USE ONLY**

Read and understand instruction manual before use and maintenance. Observe on warnings.



Do not use spray materials containing reactive solvents with equipment containing aluminum, galvanized or zinc coated wetted parts. e.g. Dichloromethane and ethylene chloride can chemically react with aluminum and galvanized or zinc coated parts and cause explosion hazard.

## ⚠ WARNING



**Do not process flammable, explosive, toxic or otherwise hazardous materials without first performing an appropriate hazard analysis.**

VR Coatings cannot be an expert in the chemical and biological properties of the infinite number of materials that could be processed in this machine. As sold by VR Coatings, this machine is not designed to safely process hazardous materials unless additional precautions are not taken.

Before processing any material that are(or can react to become) flammable, explosive, toxic or otherwise hazardous, the user must perform a thorough hazard analysis and risk assessment of the entire process and determine the best way to deal with the hazard(s) identified, including contingency plans for dealing with processing errors and object conditions.



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.
- Wore protective equipment designed for that use.
- were glasses, gloves, shoes clothes and mask for breath.

## ⚠ WARNING



SKIN INJECTION HAZARD. Protect hands and body from high pressure fluids. Relieve pressure before disconnecting hydraulic or other lines and tighten all connections before applying pressure. In case of accidental skin injection, seek immediate "Surgical Treatment". Failure to follow this warning can result in amputation or serious injury.

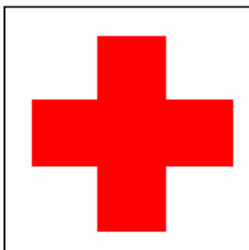


An airless spray gun requires that fluid be introduced to it at very high pressure. Fluids under high pressure, from spray or leaks, can penetrate the skin and inject substantial quantities of toxic fluid into the body. If not promptly and properly treated, the injury can cause tissue death or gangrene and may result in serious, permanent disability or amputation of the wounded part. Therefore extreme caution must be exercised when using any airless spray equipment.

**IF YOU ARE INJECTED, SEE A PHYSICIAN IMMEDIATELY. DO NOT TREAT AS A SIMPLE CUT!**

### NOTE TO PHYSICIAN:

Injection into the skin is a serious, traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is concerned with some exotic coatings injected directly in to the bloodstream. Consultation with a plastic surgeon or a reconstructive hand surgeon may be advised





- NEVER attempt to force the flow of fluid backward through the gun with your finger, hand or hand-held object against the gun nozzle.



- Before flushing system, always remove spray tip and adjust fluid pressure to lowest possible setting.



WARNING: The paint hose can develop leaks from wear, kinking, abuse etc. A leak is capable of injecting fluid into the skin; therefore the paint hose should be inspected before use. NEVER attempt to plug a hose with any part of your body, adhesive tape or any other makeshift device. Do not attempt to repair a spray hose. Instead, replace it with a new grounded hose. You must see to it that the following points are followed for hoses, accessories or any other hardware :

- ☐ Comply with manufacturer's recommendations.
  - ☐ Withstand the pressure ranges with correct safety factor.
  - ☐ Must not show any leaks, kinks, sign of wear and should be factory fitted and pressure tested.
- An air pressure safety valve forms an integral part of the air motor or air regulator and must not be altered or tampered with.



**⚠ 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.

**SERVICING** Before servicing, cleaning or removing any part, always shut off power source, carefully release pressure in fluid portions of the system and set safety locks on guns and equipment

**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.**

**⚠ 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 fire or explosion.



Due to static electricity potential generated by the high velocity of fluid through the pump, hose and tip, sparking may occur and the system may be hazardous. This can result in an explosion and/or fire, if every part of the spray equipment is not properly grounded. Be sure that both the object being sprayed and the airless equipment are grounded.

This can be done by attaching a static wire to water piping or building structural members known to be earthen. If the hose does not contain a static electricity conductor, a static wire must be attached from the spray gun to the earth.

**⚠ CAUTION**

Before any adjustment, inspection, maintenance, cleaning, removing work always shut off the power source, carefully release pressure in fluid of the system and set safety locks on guns.



ALWAYS follow the coating or solvent manufacturer's safety precautions and warnings. Never spray flammable material near open flames, pilot lights or any other source of ignition.



If you experience any static sparking or slight shock while using the equipment, stop spraying immediately. Check the entire system for proper grounding. Do not use the system again until the problem has been corrected.

Follow material supplier's instructions carefully and ensure adequate ventilation of working area to prevent health hazards.

**⚠ 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 assure proper grounding and prevent static discharge, which could cause serious bodily injury.

**⚠ CAUTION**

**FINGURE OR HANDS PINCH HAZARD. KEEP HANDS CLEAR OF MOVING PARTS COUPLING AND PISTONS**

Before servicing/removing any part always shut off power source and release pressure in fluid portions of the system.

**⚠ CAUTION**

**DO NOT START PUMP IF GUARD IS NOT AT “UP” POSITION.**

**TO SET “UP” POSITION**-hold by hands push upward till it locks in ball catch.

**TO SET “DOWN” POSITION**-Push downward.

**FINGURE 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.

**⚠ CAUTION**

Ensure that temperature of hot fluid used in the equipment shall not exceed 80% of the self-ignition temperature of the gases/solvent vapour in explosive atmosphere, in which equipment is used.

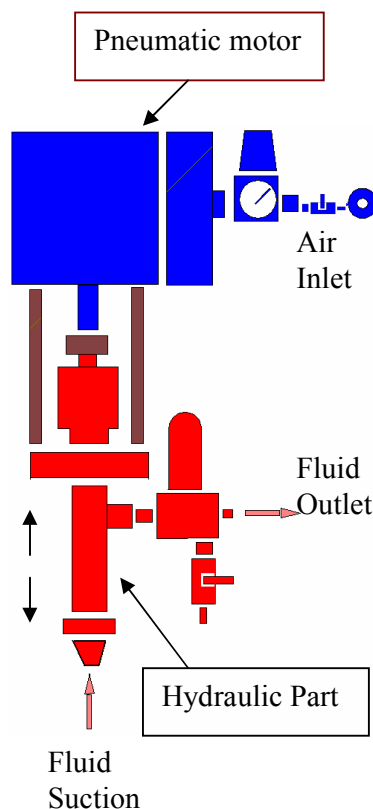
**⚠ CAUTION**

Check the compatibility of the solvent used in the equipment with the materials of wetted parts.



## OPERATING INSTRUCTIONS

### GENERAL DESCRIPTION:



**Pneumatic piston Pumps** are made for spraying, Dispensing, and transferring of various types of liquid/semi solid. These 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)

The above is intended to obtain the following data: s

**Material Pressure :** Pressure Input x Transmission Ratio

**Displaced Volume :** Double Stroke Volume x No. Of double stroke/ min. E.g. 50 double strokes/min.)

The pump works double acting and self-priming and serves to transfer the spray material to the spray gun by making it pass through a filter and a high pressure hose. Its differential piston, 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 features a layer of hard chrome of about 200 microns to protect against wear. The suction and delivery ball 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 which do not exceed 91db in case of Rhino and 81db in case of Tiger range pump.

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 net.

## 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.
- 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.

## ⚠ CAUTION



**FINGURE 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 UP 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.

<b>⚠ CAUTION</b>	
	<b>Have Trigger Lock engaged at all times when not spraying/in use.</b>

#### 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.

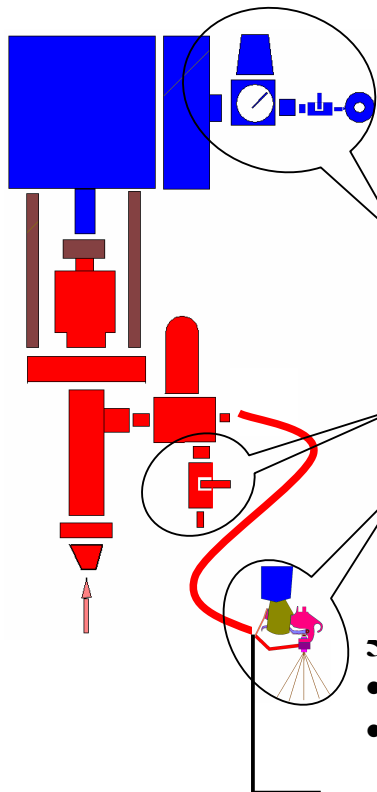
**⚠ CAUTION**



### 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 assure 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.

#### 5. 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 contain, 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 unto 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:**

- 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 level of lubricant in pump packing take-up nut & tighten oil cup if required.  
**Note:** Change lubricant every 50 hours of operation, earlier in oil cup pumps. Discoloration of lubricant indicates packing wear or failure. This will affect pump performance. 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.



<b>TECHNICAL SPECIFICATIONS</b>
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Name	Type	Ratio	Output/cycle (cc)	Air motor piston $\phi$ mm	Stroke length mm	Air inlet pressure Max (bar)	Output Pressure Max. (bar)	Air consumption N lt./min. @ 25 Cycle
<b><u>CUB</u></b>	1:240	1:1	240	60	70	6	6	60
	2:240	2:1	240	80	70	6	12	106
	2:400	2:1	400	80	120	6	12	181

## 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
AIMOTOR	Press sensing valve provided on control block 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		Not sufficiently ventilated, loose suction connection		Not sufficiently 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 and packing		Leaking piston and packing		Leaking 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				
SUCTION SET		Filter mesh blocked		Filter mesh blocked	Filter mesh blocked		
MATERIAL HOSE	Blocked, check where and clean out	Blocked, check where and clean out	Blocked, check where and clean out				
ATOMIZER	Orifice of spray cap blocked		Orifice spray too large				
MATERIAL BEING USED	Viscosity too high						

## WARRANTY

VR Coatings warrants all equipments manufactured by us, as long as it is bearing original identification plate, to be free from defects in material and workmanship for a period of one year from ex-works date. VR Coatings will repair or replace any part of the equipment proven defective. The warranty applies only when the equipment is installed, operated and maintained in accordance with VR Coatings written recommendations.

Warranty claims found to be defective shall be verified and confirmed by VR Coatings.

Our warranty does not cover and VR Coatings shall not be liable for any malfunction, damages, or fair wear and tear caused by faulty installation, misuse, abrasion, corrosion, inadequate or improper maintenance, negligence, tempering, accident or incorporation of non VR Coatings parts, non observance of VR Coatings recommendations.

This warranty only consists of replacing the parts returned to our plant prepaid transportation and proven defective by us. If inspection of the equipment /part does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the cost of parts, labor and transportation. VR Coatings shall not be liable for any losses resulting from a production breakdown.

Material bought in equipment, which is sold but not manufactured by VR Coatings, will be subject to the manufacturer's warranty. VR Coatings will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

## NOTES

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# SAFETY LABELS AND NAMEPLATE



Label on pump

label no.W.01



Label on pump provided without coupling guard Label no.W.02



Label on pump provided with coupling guard Label no.W.03

*Safety labels free of charge on request*

