STORM MACHINERY

30:1 AIRLESS SPRAY PUMP

OPERATING INSTRUCTIONS
& SERVICE MANUAL

Important Safety Instructions
Read all warnings and instructions in this manual.
Do not proceed until you fully understand its contents
These WARNINGS are included for the health and safety of the operator and those in the immediate vicinity.
Save these instructions.

Storm Machinery
www.stormmachinery.co.za
sales@stormmachinery.co.za

Table of Contents

Symbols

Warning Symbol

⚠ WARNING

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol

⚠ CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the corresponding instructions.

Component Identification - Trolley Mount

1. Air Motor
2. Trolley Frame
3. Air Regulator & Gauge
4. Surge Chamber
5. Fluid Suction Hose & Tube
6. Mounting Bolts
7. Airless Spray Gun
8. High Pressure Gun Swivel
9. Fluid Delivery Hose
10. High Pressure Fitting (required when extending/joining hoses)

H. Air Supply Hose (min 13mm ID hose)

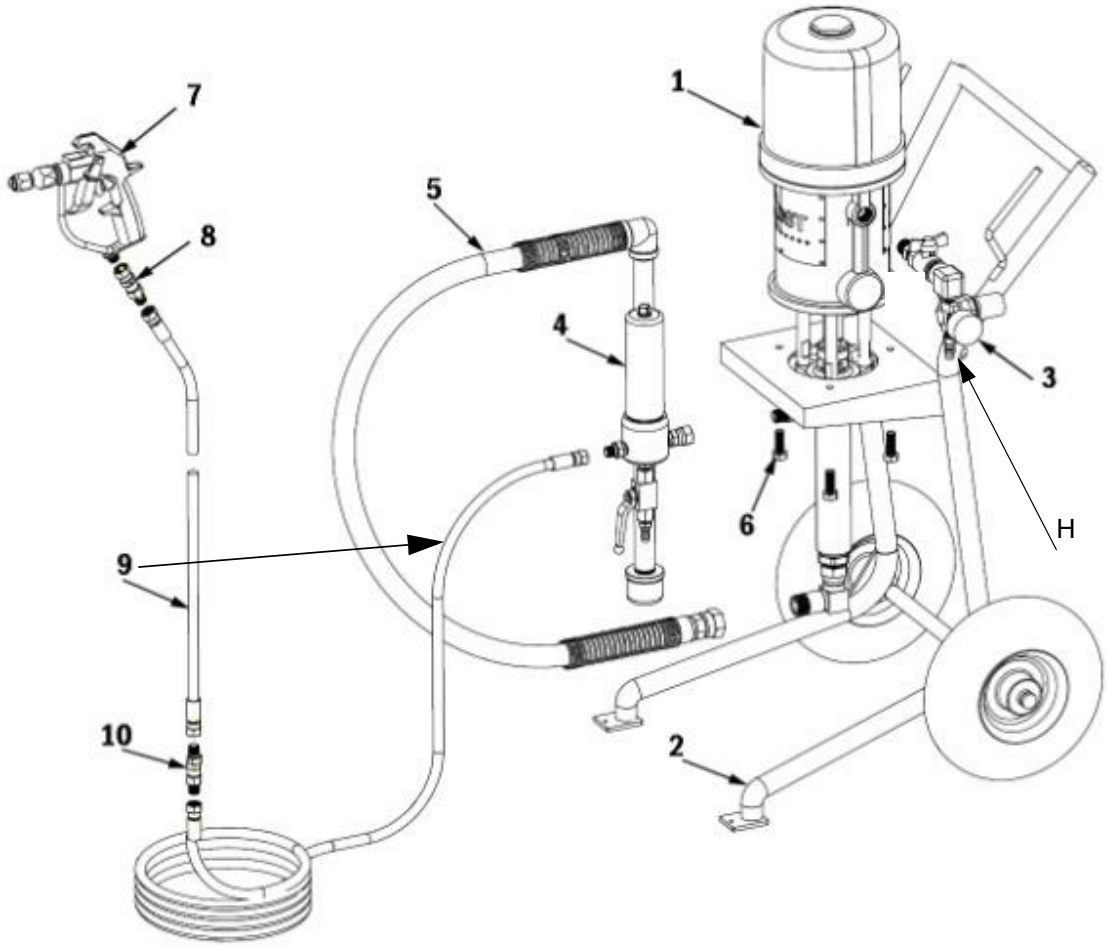


Fig. 1

⚠ WARNING

INSTRUCTIONS

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. If you are uncertain about usage, call Storm Machinery or your nearest distributor.

Do not alter or modify this equipment. Use only genuine Storm Machinery parts and accessories.

Check equipment daily. Repair or replace worn or damaged parts immediately.

Do not exceed the maximum working pressure of the lowest rated system component. Refer to the **Technical Data** on page 25 for the maximum working pressure of this equipment.

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.

Do not use hoses to pull equipment.

Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Storm Machinery 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.

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

Moving parts, such as the air motor piston, can pinch or amputate your fingers.

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

⚠ WARNING

SKIN INJECTION HAZARD

Spray from the gun/valve, hose leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.

Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate medical attention.**

Do not point the gun at anyone or at any part of the body.

Do not put your hand or fingers over the spray tip.

Do not stop or deflect leaks with your hand, body, glove or rag.

Do not “blow back” fluid; this is not an air spray system.

Always have the tip guard and the trigger guard on the gun when spraying.

Be sure the gun trigger safety operates before spraying.

Lock the gun trigger safety when you stop spraying.

Follow the **Pressure Relief Procedure** on page 9 whenever you: are instructed to relieve pressure; stop spraying; clean, check, or service the equipment; and install or clean the spray tip.

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.

Use only Storm Machinery approved hoses. Do not remove any spring guard that is used to help protect the hose from rupture caused by kinks or bends near the couplings.

FIRE AND EXPLOSION HAZARD

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

Ground the equipment and the object being sprayed. Refer to **Grounding** on page 6.

If there is any static sparking or you feel an electric shock while using this equipment, **stop spraying immediately.** Do not use the equipment until you identify and correct the problem.

Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being sprayed.

Keep the spray area free of debris, including solvent, rags, and gasoline.

Electrically disconnect all equipment in the spray area.

Extinguish all open flames or pilot lights in the spray area.

Do not smoke in the spray area.

Do not turn on or off any light switch in the spray area while operating or if fumes are present.

Do not operate a gasoline engine in the spray area.

Installation

Grounding

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Before operating the pump, ground the system as explained below. Also read the section **FIRE AND EXPLOSION HAZARD** on page 5.

1. *Pump:* loosen the grounding lug locknut (A) and washer (B). Insert one end of a 1.5 mm2 minimum ground wire (C) into the slot in lug () and tighten the locknut securely. See Fig. 1. Connect the other end of the wire to a true earth ground.

2. *Air and fluid hoses:* use only electrically conductive hoses with a maximum of 500 ft (150 m) combined hose length to ensure grounding continuity.

3. *Air compressor:* follow manufacturer's recommendations.

4. *Spray gun:* grounding is obtained through connection to a properly grounded fluid hose and pump.

5. *Object being sprayed:* according to your local code.

6. *Fluid supply container:* according to your local Code.

7. *All solvent pails used when flushing*, according to your local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.

8. *To maintain grounding continuity when flushing or relieving pressure*, always hold a metal part of the spray gun firmly to the side of a grounded metal pail, then trigger the gun.

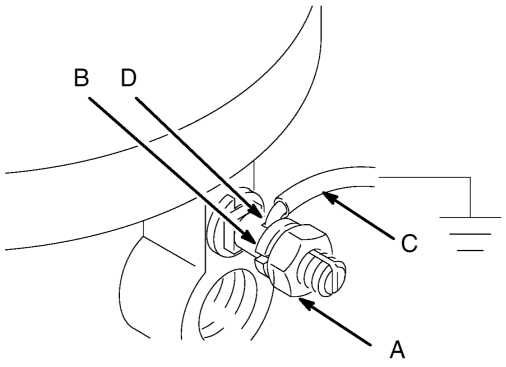


Fig. 2

NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.

Contact your Storm Machinery distributor for available accessories.

If you supply your own accessories, be sure they are adequately sized and pressure–rated to meet the system's requirements.

Owing to the fact that every Installation has specific needs,these guidelines can be used for selecting and installing system components and accessories. Contact Storm Machinery, or your nearest distributor for assistance in designing a system to suit your particular needs.

System Accessories

⚠ WARNING

Two accessories are required in your system: a bleed-type master air valve (D) and a fluid drain valve (J). These accessories help reduce the risk of serious injury including splashing in the eyes or on the skin, and injury from moving parts if you are adjusting or repairing the pump.

The bleed-type master air valve relieves air trapped between this valve and the pump after the air is shut off. Trapped air can cause the pump to cycle unexpectedly. Locate the valve close to the pump.

The fluid drain valve assists in relieving pressure in the displacement pump, hose, and gun. Triggering the gun to relieve pressure may not be sufficient.

Air and Fluid Hoses

Be sure all air and fluid hoses are properly sized and pressure–rated for your system. Use only grounded air and fluid hoses. Fluid hoses must have spring guards on both ends.

Connect a grounded fluid hose (9) to the pump's fluid outlet.

The use of a short whip hose between the main fluid hose and the gun maybe required when using 3/8" fluid delivery hose. This allows more freedom for gun movement.

Connect a fluid suction hose (N) to the pump's 3/4 npt(m) fluid intake.

Use a grounded 13mm. I.D. (minimum) air hose (H) to supply air to the pump.

Air Line Accessories

The following accessories can be installed, using adapters where necessary:

An air line lubricator provides automatic air motor lubrication.

A bleed–type master air valve is required in your system to relieve air trapped between it and the air motor when the valve is closed (see the **WARNING** at left). Be sure the bleed valve is easily accessible from the pump, and is located **downstream** from the air regulator.

An air regulator controls pump speed and outlet pressure by adjusting the air pressure to the Pump.
Locate the regulator close to the pump, but **upstream** from the **bleed–type** master air valve.

An air line filter removes harmful dirt and moisture from the compressed air supply.

Operation

Pressure Relief Procedure

⚠ WARNING

SKIN INJECTION HAZARD

Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

are instructed to relieve the pressure,

stop spraying, check or service any of the system equipment, or install or clean the spray tip.

1. Lock the spray gun trigger safety.
2. Shut off the air to the pump.
3. Close the bleed-type master air valve (required in your system).
4. Unlock the spray gun trigger safety.
5. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
6. Lock the spray gun trigger safety.
7. Open the drain valve (required in your system), having a container ready to catch the drainage.
8. Leave the drain valve open until you are ready to spray again.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.

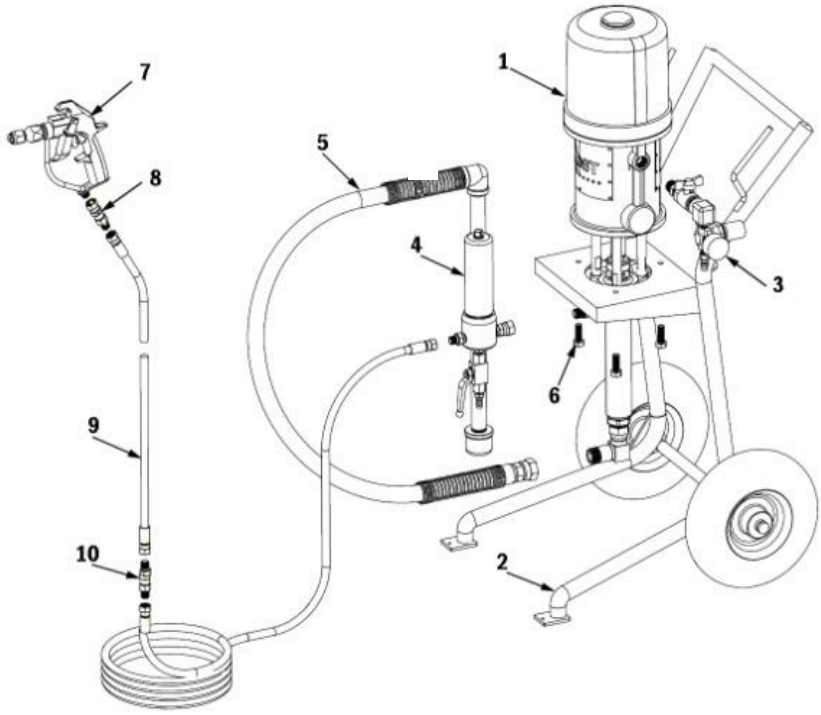


Fig. 1

Operation

⚠ WARNING

Moving parts can pinch or amputate your fingers or other body parts. When air is supplied to the motor, the air motor piston (located behind the air motor plates) moves. See Fig. 2. Therefore, never operate the pump with the air motor plates removed.

Flush the Pump Before Using

The pump is tested with lightweight lubricant, which is left in to protect the pump parts. If the coating you are applying could be contaminated by the lubricant, flush it out with a compatible solvent before using the pump. If the pump is being used to supply a circulating system, allow the solvent to circulate until the pump is thoroughly flushed.

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Before operating the pump, ground the system as explained in **Grounding** on page 6. Also read the section **FIRE AND EXPLOSION HAZARD** on page 5.

Starting and Adjusting the Pump

Be sure the air regulator (3) and bleed–type master air valve are closed. *DO NOT INSTALL THE SPRAY TIP YET!*

Connect a suction hose (5) to the pump's fluid inlet. Hold a metal part of the spray gun (7) firmly to the side of a grounded metal pail and hold the trigger open. Then open the pump's bleed–type master air valve. Now slowly open the air regulator until the pump starts, about 2.8 bar (40 psi / 280 kPa.)

Cycle the pump slowly until all the air is pushed out and the pump and hoses are fully primed. Release the spray gun trigger and engage the safety latch. The pump should stall against pressure when the trigger is released.

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 9.

Relieve the pressure, then install the spray tip in the gun.

With the pump and lines primed, and with adequate air pressure and volume supplied, the pump will start and stop as the spray gun is opened and closed. In a circulating system, the pump will run continuously and will speed up or slow down as supply demands until the air supply is shut off.

Use an adequately sized air regulator (3) to control the pump speed and the fluid pressure. Always use the lowest air pressure necessary to get the desired results. Higher pressures waste fluid and cause premature wear of the pump packings and spray tip.

⚠ WARNING

To reduce the risk of over pressurizing your system, which could result in component rupture and cause serious injury, never exceed the *Maximum Incoming Air Pressure* given on your pump or in the **Technical Data** on pages 25.

Keep the packing nut/wet–cup (4) filled with Storm Machinery Throat Lubricant (DOP) or compatible solvent, to help prolong the life of the packings. Adjust the packing nut weekly, so it is just tight enough to prevent leakage; do not over tighten. See Fig. 2.

Always **relieve the pressure** before adjusting the packing nut.

Never allow the pump to run dry of the fluid being pumped. A dry pump will quickly accelerate to a high speed, possibly damaging itself. A pump runaway valve, which shuts off the air supply to the pump if the pump accelerates beyond the pre–set speed, is available. If your pump accelerates quickly, or is running too fast, stop it immediately and check the fluid supply. If the supply container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines with fluid, or flush and leave it filled with a compatible solvent. Be sure to eliminate all air from the fluid system.

Operation

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

Shutdown and Care of the Pump

For overnight shutdown, **relieve the pressure**. Always stop the pump at the bottom of the stroke to prevent the fluid from drying on the exposed displacement rod and damaging the throat packings.

Always flush the pump before the fluid dries on the displacement rod. **Relieve the pressure** after flushing.

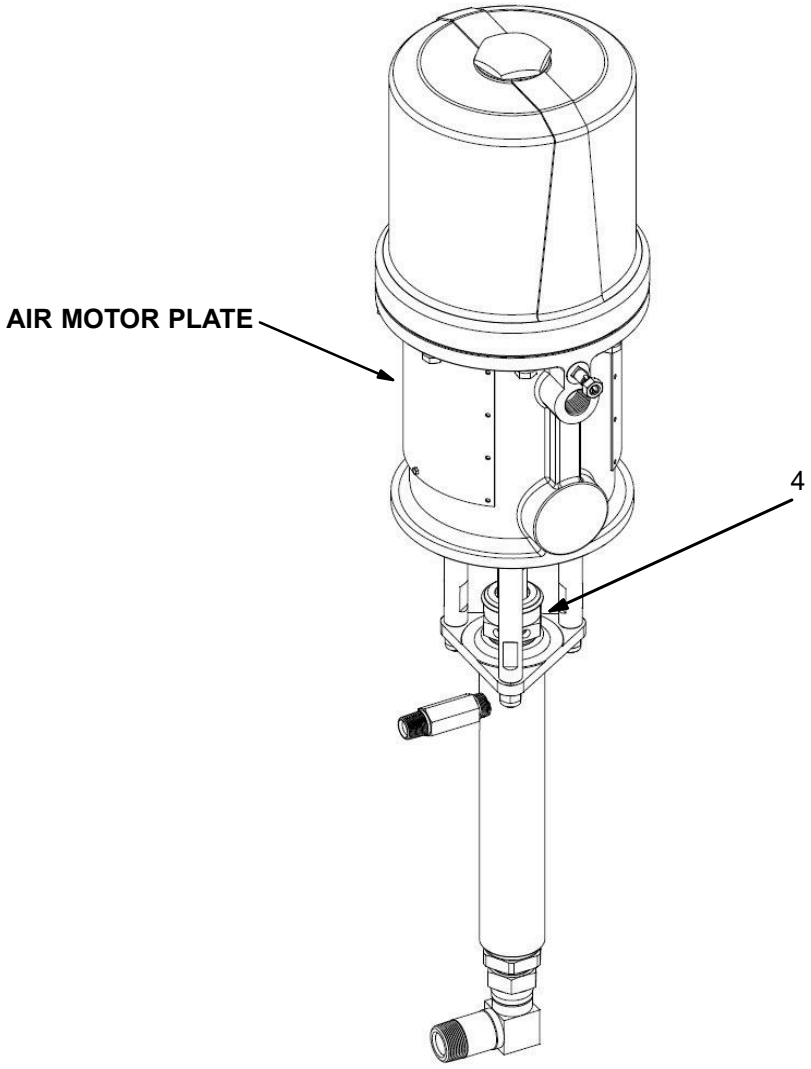


Fig. 2

Troubleshooting

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

1. **Relieve the pressure**.
2. Check all possible causes and problems before disassembling the pump.

Problem	Cause	Solution
Pump does not operate	Air Valve and/or hose closed or clogged	Check that all valves are open and in good working order. Clean and clear air Line. Increase air supply
	Damaged Air Regulator	Replace Air Regulator
	Hose and/or Gun obstructed with product (paint)	Clean/flush hose and/or gun (replace if necessary)
	Cured/dried fluid(paint) seizure of displacement rod (19)	Clean displacement rod; Clean H.P. Filter Manifold; Always stop pump at bottom of stroke and keep wet-cup filled with compatible solvent; check and replace lower packings if necessary
	Air motor stopped on change over (worn or damaged poppet valves)	Reset or replace Poppet valves
	Air motor parts, dirty, worn or damaged.	Clean or repair Air motor
Output low on both strokes	Inadequate air supply or Restricted Air line, Valves closed or clogged	Clear airline; Increase air supply Check all valves are open
	Obstructed H.P.Filter manifold and/or hose and gun	Clean and clear obstruction in Filter/Hose/Gun.
	Packing nut either too tight or too loose (4 Fig 2) or worn packings	Adjust Packing nut (see page 10) or replace packings
Output low on down stroke	Intake valve obstructed/dirty or worn(damaged)	Clean or replace intake valve if necessary
	Worn Packings	Replace Packings
	High viscosity product	Adjust intake spacers
Output low on up stroke	Piston Valve obstructed/dirty or worn(damaged)	Clean or replace piston valve if necessary
	Worn packings	Replace packings

* To determine if the fluid hose or gun is obstructed, **relieve the pressure**. Disconnect the fluid hose and place a container at the pump fluid outlet to catch any fluid. Turn on the air just enough to start the pump (about 1.4–2.8 bar /20–40 psi [140–280 kPa,). If the pump starts when the air is turned on, the obstruction is in the fluid hose or gun.

Troubleshooting contd.

Problem	Cause	Solution
Erratic Pump Acceleration (run away)	Exhausted product supply, clogged suction hose	Refill supply and prime pump. Clean suction tube
	High Viscosity product	Adjust intake spacers
	Obstructed or worn piston valve	Clean or replace piston valve if necessary
	Obstructed or worn intake valve or lower packings	Clean or replace intake valve if necessary Replace lower packings
Pump cycles or fails to hold pressure at stall	Worn Check Valves or Seals	Service Lower : See Pump Lower Removal page 13
Air bubbles in product	Loose or damaged suction tube	Tighten using compatible thread sealant or PTFE on connectors. Replace suction tube if necessary
Poor Finish, Irregular spray pattern.	Incorrect fluid pressure at the gun	See gun manual; Increase pump pressure
	Fluid too thick or too thin (incorrect viscosity)	Adjust fluid viscosity (See note Below)
	Spray gun dirty, damaged or worn.	Service or Replace spray gun if necessary.
	Spray tip dirty, damaged or worn. Incorrect Tip Size for application	Clean or Replace spray tip if necessary. **N.B. ALWAYS Read fluid manufacturer's data sheet for recommendations.**

Service

DISCONNECTING THE DISPLACEMENT PUMP

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

1. Flush the pump if possible. Stop the pump at the bottom of its stroke. **Relieve the pressure.**

2. Disconnect the air and fluid hoses. Remove the pump from its mounting. Note the relative position of the pump's fluid outlet to the air motor's air inlet.

3. Unscrew the tie rod locknuts (105) from the tie rods (106). Remove the cotter pin (104). Unscrew the displacement rod (A) from the air motor (101). Carefully pull the displacement pump (102) off the air motor (101). See Fig 3.

4. Refer to displacement pump service page .
   To service the air motor, refer to the separate air Motor section page

RECONNECTING THE DISPLACEMENT PUMP

1. Screw the displacement rod (A) into the base of the air motor (101). Install the cotter pin (104). Orient the pump's fluid outlet to the air motor's air inlet as was noted in step 2 under **Disconnecting the Displacement Pump.** See Fig 3.

2. Position the displacement pump (102) on the tie rods (110). Screw the locknuts (106) onto the tie rods (110) loosely.

3. Mount the pump and reconnect all hoses. Reconnect the ground wire if it was disconnected during repair. Torque the packing nut/wet–cup (4) to 24–27 N.m (18–20 ft–lb). Fill the wet–cup with Storm Machinery Throat Seal Liquid or compatible solvent.

4. Tighten the tie rod locknuts (106) evenly, and torque to 34–41 N.m (25–30 ft–lb).

5. Start the pump and run it at about ,2.8 bar / 40 psi (280 kPa) air pressure, to check that it is operating properly.

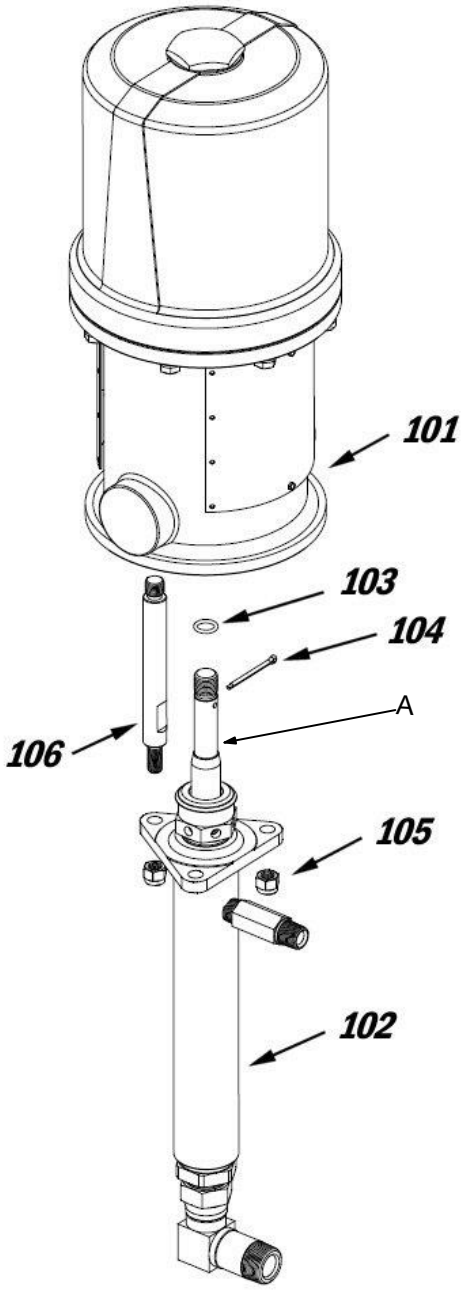


Fig. 3

Displacement Pump Service

Disassembly

When disassembling the pump, lay out all removed parts in sequence, to ease reassembly. Refer to Fig 4.

NOTE: Repair Kit 235635 is available. For the best results, use all the new parts in the kit. Parts included in the kit are denoted with one asterisk, for example (6*).

Clean all the parts thoroughly when disassembling. Check them carefully for damage or wear, replacing parts as needed.

1. Remove the displacement pump from the air motor as explained on page 13.

2. Unscrew the intake valve housing (1) from the outlet housing (3). If it is difficult to remove, squirt penetrating oil around the threads and *gently* tap around the valve housing with a plastic hammer to loosen it. See Fig 4.

3. Remove the ball stop pin (14), o–ring retainer (16), o–ring (15), guide (22) and ball (7) from the intake valve housing (1).

4. Loosen the packing nut (4). Push the displacement rod (19) down as far as possible, then pull it out the bottom of the outlet housing (3).

5. Secure the flats of the piston stud (2) in a vice. Using a wrench on the flats of the displacement rod (19), screw the rod off the piston. Remove the ball (6), retainer (12), packings (8, 13) and glands (17, 18).

6. Remove the packing nut (4), throat packings (8, 13) and glands (17, 18) from the outlet housing (3).

7. Inspect all parts for damage. Clean all parts and threads with a compatible solvent before reassembling. Inspect the polished surfaces of the displacement rod (19) and sleeve (10) for scratches,scoring or other damage, which can cause premature packing wear and leaking. To check, run a finger over the surface or hold the part up to the light at an angle. Be sure the ball seats of the piston (2) and intake valve housing (1) are not chipped or nicked. Replace any worn or damaged parts.

NOTE: If the sleeve (10) needs replacement and is hard to remove, contact Storm Machinery or your nearest distributor.

Reassembly

1. Lubricate the throat packings and install them in the outlet housing (3) one at a time as follows, *with the lips of the v–packings facing down:* the male gland (17*), one PTFE v–packing (13*), two leather v–packings (8*), one PTFE (13*), one leather (8*), one PTFE (13*), and the female gland (18*). Install the packing nut (4) loosely. See Fig 4.

2. If you removed the sleeve (10), reinstall it in the outlet housing (3), making sure to replace the gasket (9*). *Be sure the tapered end of the sleeve faces down, toward the pump intake.*

3. Lubricate the piston packings and install them onto the piston stud (2) one at a time in the following order, *with the lips of the v–packings facing up:* the female gland (18*), one PTFE v–packing (13*), two leather v–packings (8*), one PTFE (13*), one leather (8*), one PTFE (13*), the male gland (17*), and the packing retainer (12). See Fig 4.

4. DO NOT use thread sealant on the piston stud. Install the piston ball (6*) on the piston and screw the piston valve assembly into the displacement rod (19). Torque to 88–102 N.m (65–75 ft–lb).

5. Insert the displacement rod (19) into the bottom of the outlet housing (3), being careful not to scratch the sleeve (10). Push the rod straight up until it protrudes from the packing nut (4).

6. Install the ball (7*), guide (22), o–ring (15*), retainer (16), and ball stop pin (14) in the intake valve housing (1). Screw the intake housing into the outlet housing (3). Torque to 102–136 N.m (75–100 ft–lb).

7. Reconnect the displacement pump to the air motor as explained on page 13.

Displacement Pump Service

△1 Torque to 24-27 N.m (18–20 ft-lb)

△2 Torque to 34-41 N.m (25–30 ft-lb)

△3 Torque President to 34–41 N.m (25–30 ft-lb)

△4 Torque to 88–102 N.m (65–75 ft-lb)

△5 Torque to 102–136 N.m (75–100 ft-lb)

△6 Lips of v-packings must face down

△7 Lips of v-packings must face up

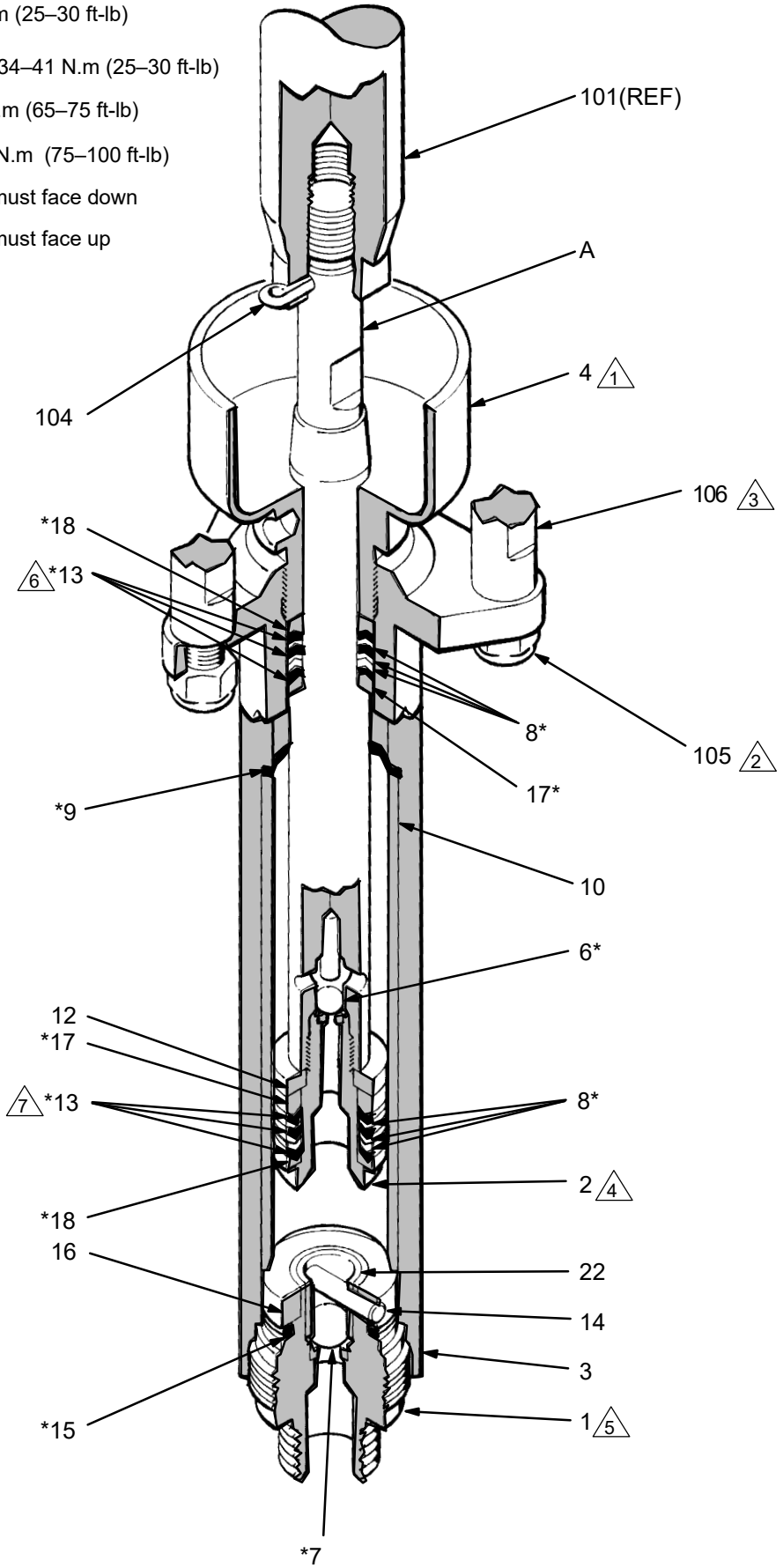
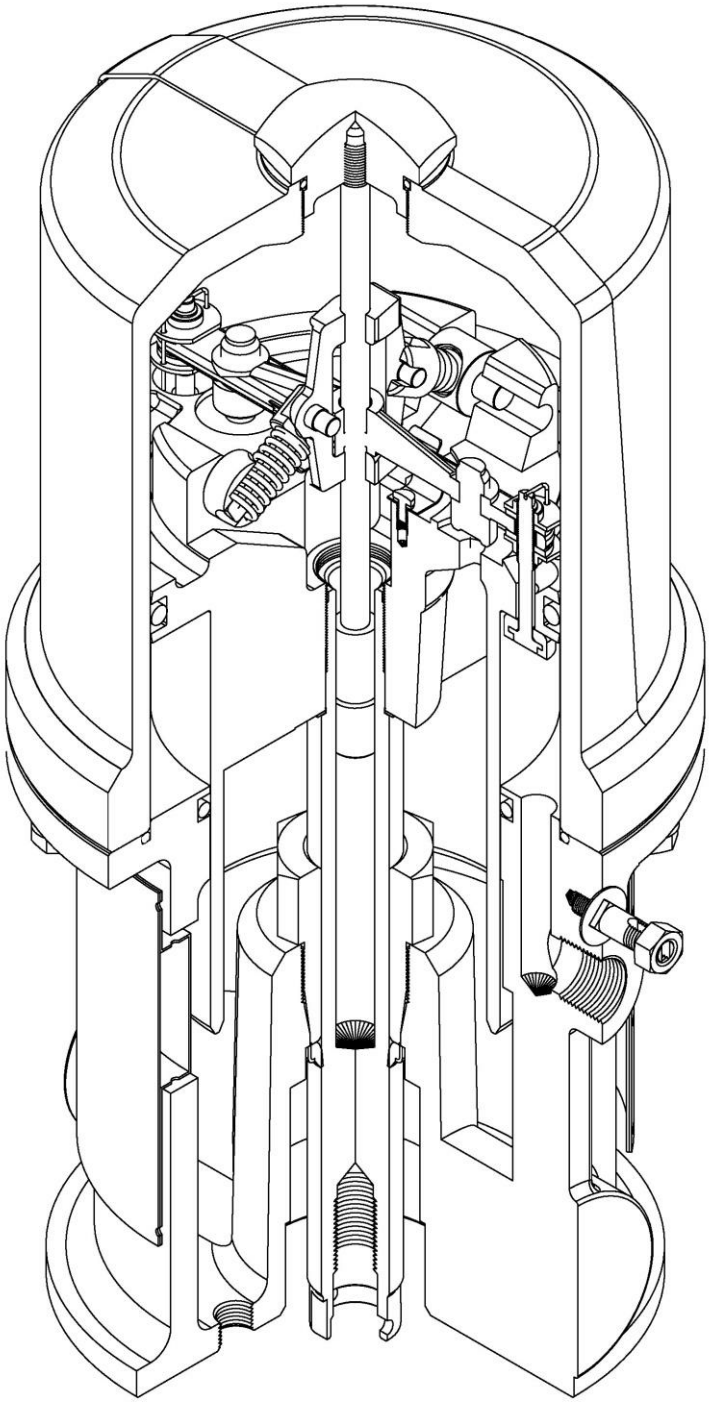


Fig. 4

Air Motor Service

Inspect all parts as they are disassembled and replace any worn or damaged parts.



Air Motor Service

Before you Start
Be sure you have all necessary parts on hand. **Air Motor Repair Kit** includes repair parts for the motor. Use all the parts in the kit for best results. Parts included in the air motor kit are marked with “A” in text and drawings. See the parts list and drawing for your pump for further information.

Disassembly
1. Flush the pump. Follow the **Pressure Relief Procedure Warning,** at left, before proceeding.

2. Disconnect the air hose from the motor. If necessary, disconnect the motor from the pump. Clamp the air motor base in a vice.

3. Manually push up on the piston rod to move the piston assembly to the top of its stroke. Unscrew the cylinder cap nut from the cylinder. Pull up on the cap nut. Grip the trip rod with padded and screw the cap nut off the trip rod. See Fig. 5.

4. Remove the eight screws holding the cylinder to the base. Carefully pull the cylinder *straight up* off the piston. See Fig.

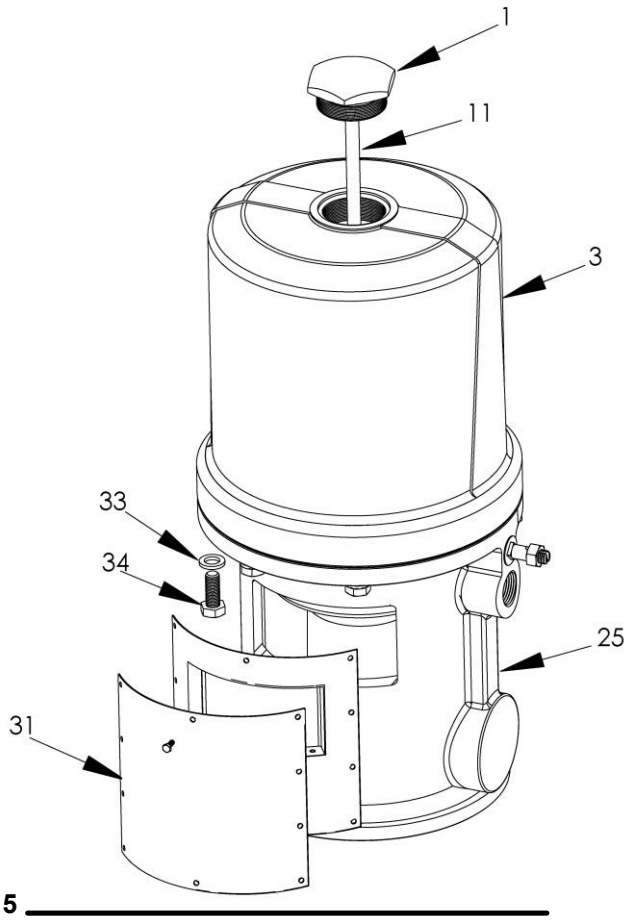


Fig. 5

CAUTION
Do not damage the plated surface of the trip rod. Damaging the surface of the trip rod can result in erratic air motor operation. Use a special padded tool , to grasp the rod.

5. Use a screwdriver to push down on the trip rod yoke and snap the toggle assemblies down. See Fig. 6. Remove the lock wires from the adjusting nuts of the transfer valves. Screw the top nuts off. Screw the valve stems out of the grommets and lower adjusting nuts. Take the valve poppet off the stems and squeeze them firmly to check for cracks.

6. Grip the toggle rockers with a pliers. Compress the springs and swing the toggle assembly up and away from the piston lugs, and remove the parts. Check that the valve actuator is supported by the spring clips, but slides easily into them. See Fig. 6.

7. Remove the trip rod yoke, valve actuator and trip rod. Check the exhaust valve poppet for cracks.

8. Pull the piston up out of the base and inspect the piston o-ring and the o-ring in the base casting.

NOTE: To remove the exhaust valve poppet, stretch them out and cut with a sharp knife.

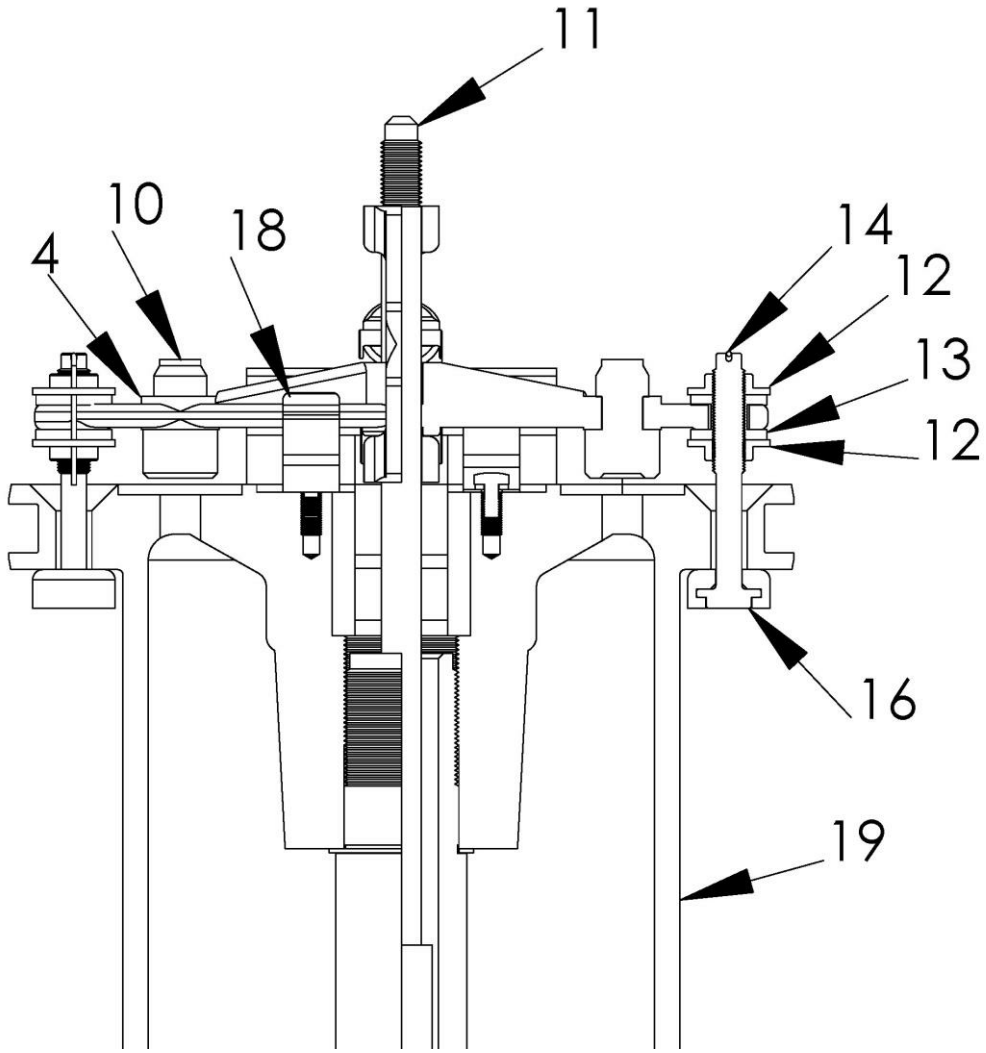


Fig. 6

Air Motor Service

Reassembly

1. Clean all the parts carefully in a compatible solvent and inspect for wear or damage. Use all the repair kit parts during reassembly and replace other parts as necessary.

2. Check the polished surfaces of the piston, piston rod and cylinder wall for scratches or wear. A scored rod will cause premature packing wear and leaking.

3. Lubricate all parts with a light, waterproof grease.

4. Be sure the o-rings are in place. Slide the piston rod down through the throat bearing and lower the piston into the air motor base.

5. Pull the exhaust valve poppet into the valve actuator and clip off the top part shown with dotted lines. See Fig. 6.

6. Install the transfer valve poppet onto the valve stems, then reassemble the valve stems, bottom adjusting nuts, grommets, and top adjusting nuts on the piston. Assemble the trip rod, valve actuator, trip rod yoke and toggle assemblies on the piston. See Fig. 6.

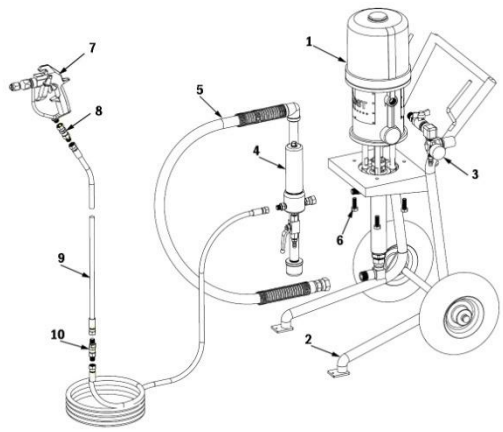
7. Before installing the lock wires in the adjusting nuts, use the special gauge to adjust the transfer valve so there is 3.18mm, (0.125in.) clearance between the poppet and the piston when the toggle assemblies are in the *down* position. See Fig. 6.

8. Snap the toggle assemblies to the *up* position. Reinstall the cylinder and cap nut. Reassemble the air motor to the displacement pump.

9. Before remounting the pump, connect an air hose and run the pump slowly, at about 2.8 bar (40 psi 0.28 MPa) to ensure that it operates smoothly.

10. Reconnect the ground wire before regular operation of the pump.

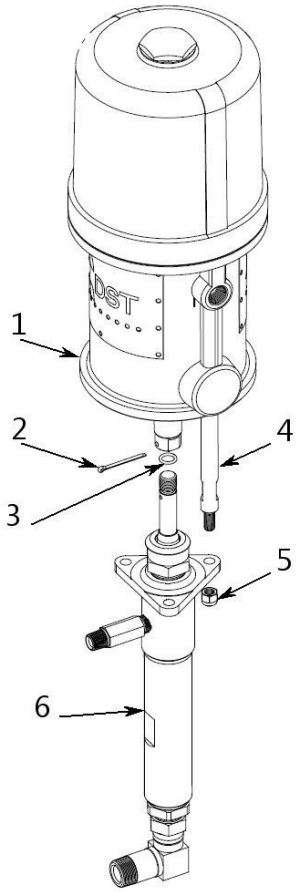
P303 PARTS DRAWING



NO	D PART	G PART	DESCRIPTION	QTY
1	P303-100	223-586	30:1 PUMP	1
2	P300-200	224-044	CART	1
3	P300-300		AIR REGULATOR ASS'Y	1
4	S300-400	218-029	SURGE TANK (small)	1
5	S300-500	214-960	SUCTION HOSE ASS'Y	1
6	S300-001	100-270	BOLT	3
7	G830-000	235-462	SPRAY GUN	1
8	ASG1-100	204-940	GUN SWIVEL ,see manual	1
9	AH01-015		HOSE , see manual	1
10	ASH1-100		HOSE SWIVEL , see manual	1

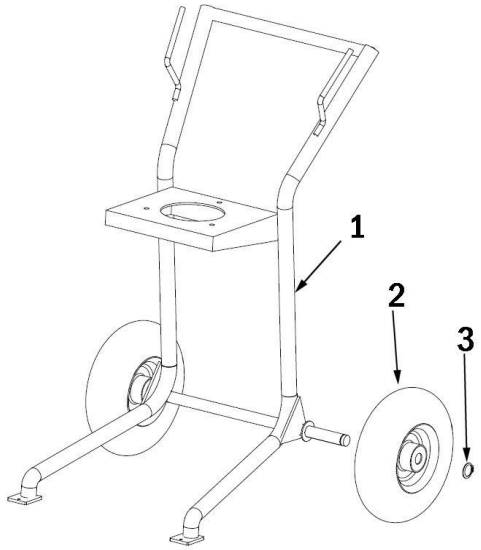
ACCESSORIES : option part 8, 9, 10

L303-100 Pump Part Drawing



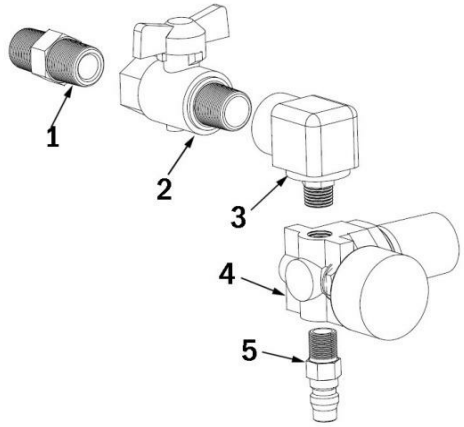
No	D Part	G Part	Description	Qty
1	P301-100	207-352	AIR MOTOR	1
2	P301-101	101-946	COTTER PIN	1
3	P301-102	156-082	O-RING	1
4	P301-103	168-221	TIE ROD	3
5	P301-104	101-566	NUT	3
6	L303-100	221-074	DIS. PUMP	1

P300-200 Part



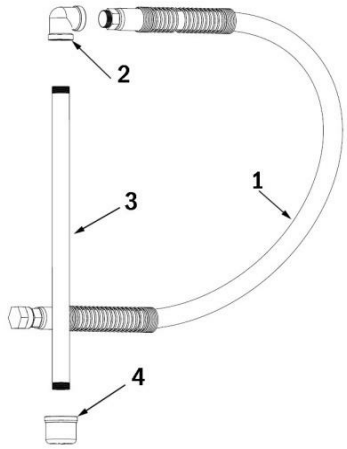
No	D Part	Description	Qty
1	P300-201	CART	1
2	P300-202	TIRE	2
3	P300-203	SNAP RING	2

P300-300 Part



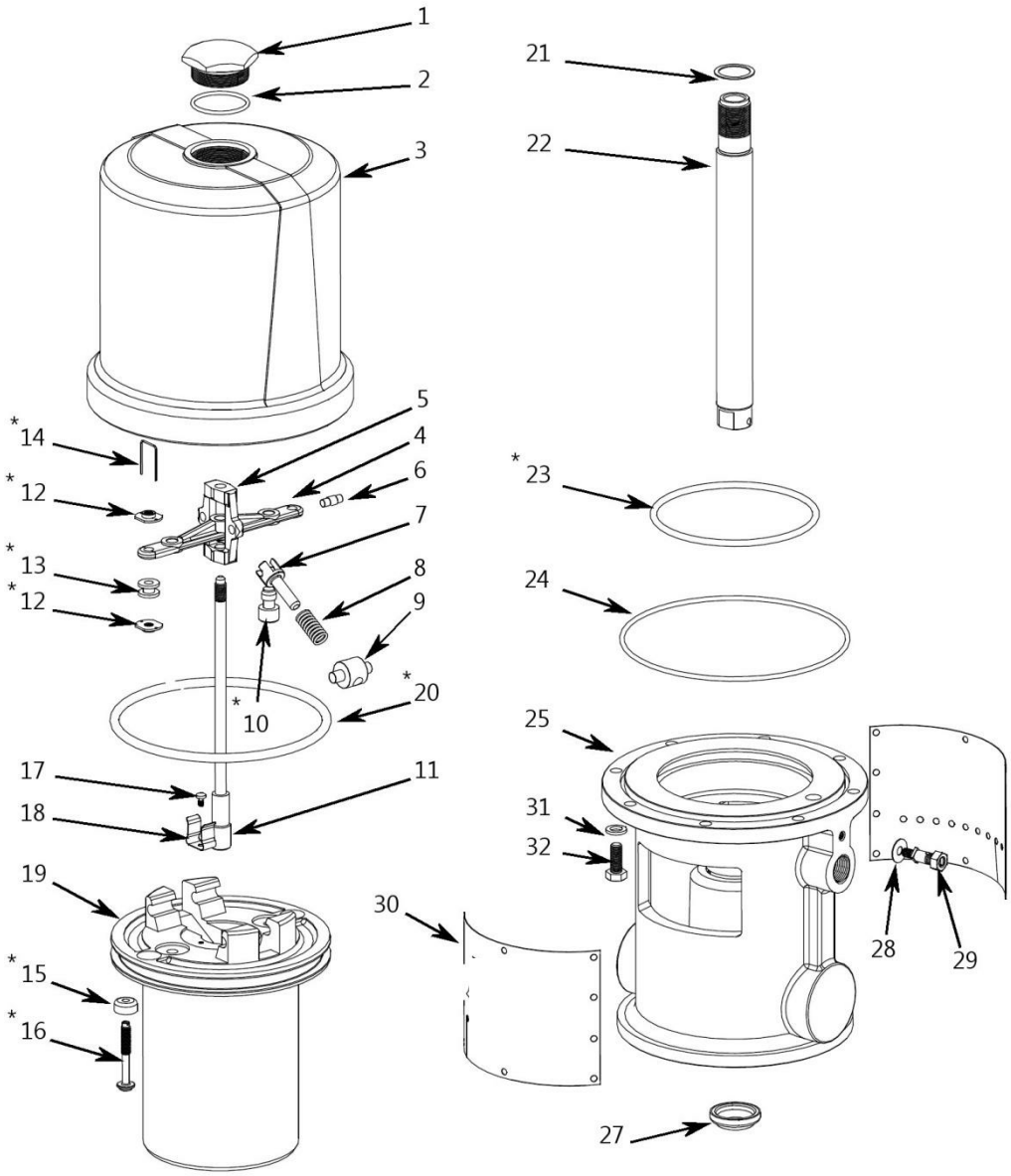
No	D Part	Description	Qty
1	P300-301	NIPPLE	1
2	P300-302	AIR SHUTOFF VALVE	1
3	P300-303	ELBOW	1
4	P300-304	AIR REGULATOR	1
5	P300-305	NIPPLE	

P300-500 Part



No	D Part	Description	Qty
1	P300-501	SUCTION HOSE	1
2	P300-502	ELBOW	1
3	P300-503	SUCTION TUBE	1
4	P300-504	STRAINER	1

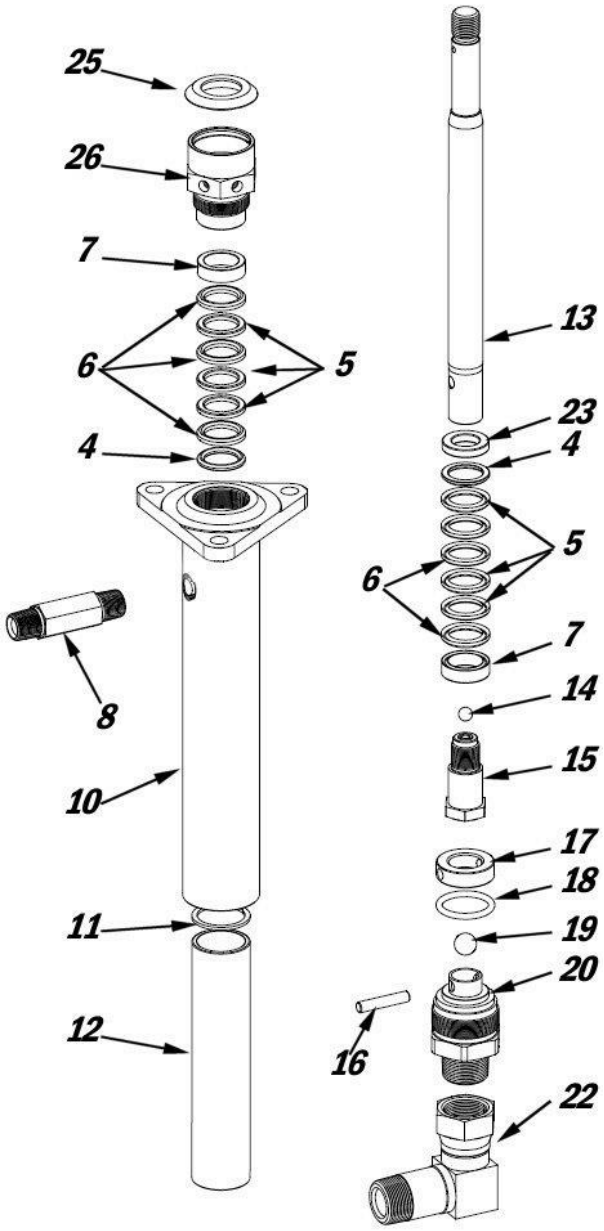
P301-100 Air Motor Part Drawing



No	D Code	G Code	Description	Qty	No	D Code	D Code	Description	Qty
1	P301-001	161-435	NUT, cylinder cap	1	19	P301-019		PISTON	1
2	P301-002	156-698	O-RING	1	20	P301-020	158-378	O-RING ,piston	1
3	P301-003	162-629	CYLINDER, motor	1	21	P301-021	150-647	GASKET, copper	1
4	P301-004	158-359	ACTUATOR, valve	1	22	P301-022	164-925	ROD, piston	1
5	P301-005	158-360	YOKE	1	23	P301-023	158-379	O-RING	1
6	P301-006	158-362	PIN, toggle	2	24	P301-024	158-377	SEAL	1
7	P301-007	160-623	ARM, toggle	2	25	P301-025	164-924	BASE	1
8	P301-008	167-585	SPRING	2	27	P301-027		DUST SEAL	1
9	P301-009	158-364	ROCKER, toggle	2	28	P301-028		WASHER	1
10	P301-010	170-709	POPPET, valve	2	29	P301-029		BOLT	1
11	P301-011	207-150	TRIP ROD	1	30	P301-030	177-844	PLATE, identification	2
12	P301-012	160-261	NUT, adjusting	4	31	P301-031		WASHER	8
13	P301-013	158-367	GROMMET, rubber	2	32	P301-032	101-578	SCREW	8
14	P301-014	160-618	LOCKWIRE	2	33	P301-033	207-391	PISTON ASS'Y	
15	P301-015	170-708	POPPET, valve	2	Part No 10, 12, 13, 14, 15, 16, 20, 23 Included in Repair KIT No P301-500 (207-385)				
16	P301-016	160-896	STEM, valve	2					
17	P301-017	102-975	SCREW	2					
18	P301-018	158-361	CLIP, spring	2					

Parts drawing and Parts List

301 DISPLACEMENT PUMP



Note : part marked in color are the spare parts

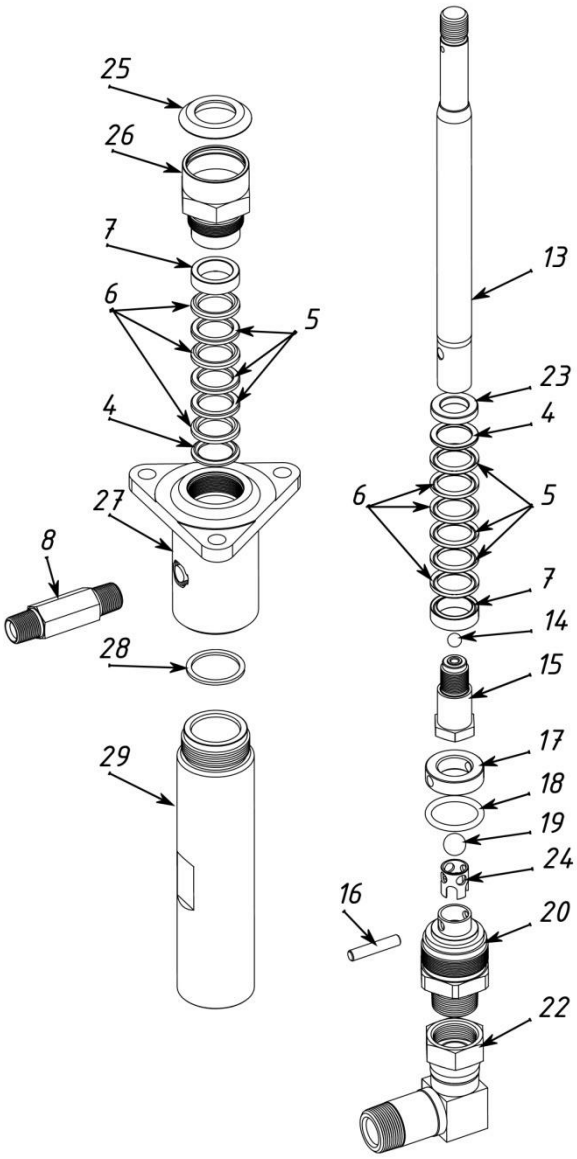
These parts are included in repair kit which may be purchased separately.

Always use genuine STORM MACHINERY parts

No	S Part	G Part	Description	Qty
4	30-204	164-894	GLAND , male	2
5	30-205	164-477	V-LEATHER	6
6	30-206	108-453	V-TEFLON	6
7	30-207	164-895	GLAND , female	2
8	30-208	156-849	NIPPLE	1
10	30-209	207-011	PUMP HOUSING	1
11	30-210	164-480	SEAL(TEFLON)	1
12	30-211	178-902	SLEEVE	1
13	30-212	223-589	DIS. ROD	1
14	30-213	102-119	BALL(5/16")	1
15	30-214	223-565	VALVE PISTON	1
16	30-215	186-179	PIN	1
17	30-216	186-183	RETAINER	1
18	30-217	165-052	SEAL(TEFLON)	1
19	30-218	101-750	BALL(1/2")	1
20	30-219	223-593	INTAKE	1
22	30-220	207-648	UNION	1
23	30-221	186-184	RETAINER	1
24	30-222	186-187	GUIDE , BALL	1
25	30-223	183-171	PLUG	1
26	30-224	207-731	PACKING , NUT	1

***** 235-635 RPK – Parts marked in color are RPK (Must be purchased separately)**

L303-100 Displacement



Note : part marked in colour are the spare parts

No	D Part	G Part	Description	Qty
4	L301-004	186-182	GLAND , male	2
5	L301-005	164-477	V-LEATHER	6
6	L301-006	164-862	V-UHMWPE	6
7	L301-007	186-181	GLAND , female	2
8	L301-008	160-790	NIPPLE	1
13	L301-013	223-589	DIS. ROD	1
14	L301-014	105-444	BALL	1
15	L301-015	223-565	PISTON VALVE	1
16	L301-016	186-179	PIN	1
17	L301-017	186-183	RETAINER	1
18	L301-018	165-052	SEAL	1
19	L301-019	105-445	BALL	1
20	L301-020	223-593	INTAKE	1
22	L301-022	207-648	UNION	1
23	L301-023	186-184	RETAINER	1
24	L301-024	186-187	GUIDE , BALL	1
25	L301-025	183-171	PLUG	1
26	L301-026		PACKING , NUT	1
27	L303-027		PUMP HOUSING	1
28	L303-028		PACKING ,	1
29	L303-029		SLEEVE	1

KIT No L303-500

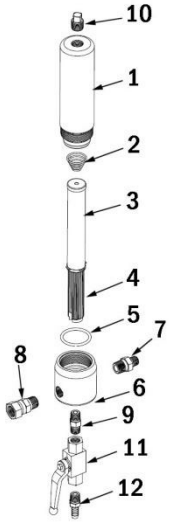
Part No 4, 5, 6, 7, 14, 18, 19, 28 Included in Repair

KIT No L303-501

Part No 4, 5, 6, 7, 14, 18, 19, 28 Included in Repair

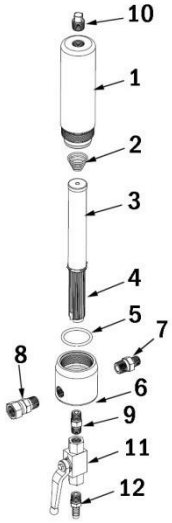
No 5 Leather V-packing 10 ea

S300-401 Carbon steel



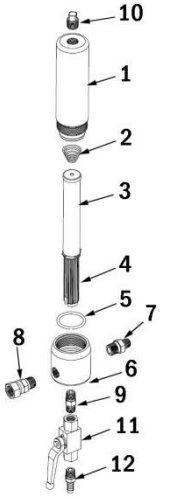
No	D Part	G Part	Description	Qty
1	S302-001	192-706	BOWL, carbon	1
2	S302-002	171-942	SPRING,compression	1
3	S302-003	167-025	SCREEN, 60 mesh	1
4	S302-004	186-075	SUPPORT, filter	1
5	S302-005	104-361	O-RING, filter	1
6	S302-006	171-942	HOUSING, carbon	1
7	S302-007	.	NIPPLE	1
8	S302-008	.	SWIVEL MALE	1
9	S302-009	.	NIPPLE	1
10	S302-010	.	PLUG	1
11	AHBV-014	.	BALL VALVE	1
12	S302-012	.	HOSE NIPPLE	1

S300-402



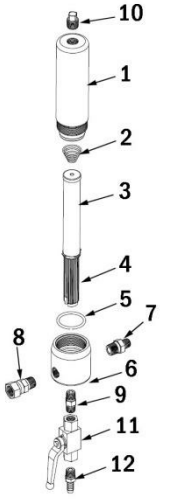
No	D Part	G Part	Description	Qty
1	S303-001	172-831	BOWL, aluminium	1
2	S302-002	171-942	SPRING,compression	1
3	S302-003	167-025	SCREEN, 60 mesh	1
4	S302-004	186-075	SUPPORT, filter	1
5	S302-005	104-361	O-RING, filter	1
6	S303-006	.	HOUSING, aluminium	1
7	S302-007	.	NIPPLE	1
8	S302-008	.	SWIVEL MALE	1
9	S302-009	.	NIPPLE	1
10	S302-010	.	PLUG	1
11	AHBV-014	.	BALL VALVE	1
12	S302-012	.	HOSE NIPPLE	1

S300-403 aluminium, carbon



No	D Part	G Part	Description	Qty
1	S302-001	172-831	BOWL, , aluminium	1
2	S302-002	171-942	SPRING,compression	1
3	S302-003	167-025	SCREEN, 60 mesh	1
4	S302-004	186-075	SUPPORT, filter	1
5	S302-005	104-361	O-RING, filter	1
6	S302-006	171-942	HOUSING, carbon	1
7	S302-007	.	NIPPLE	1
8	S302-008	.	SWIVEL MALE	1
9	S302-009	.	NIPPLE	1
10	S302-010	.	PLUG	1
11	AHBV-014	.	BALL VALVE	1
12	S302-012	.	HOSE NIPPLE	1

S300-404 stainless steel

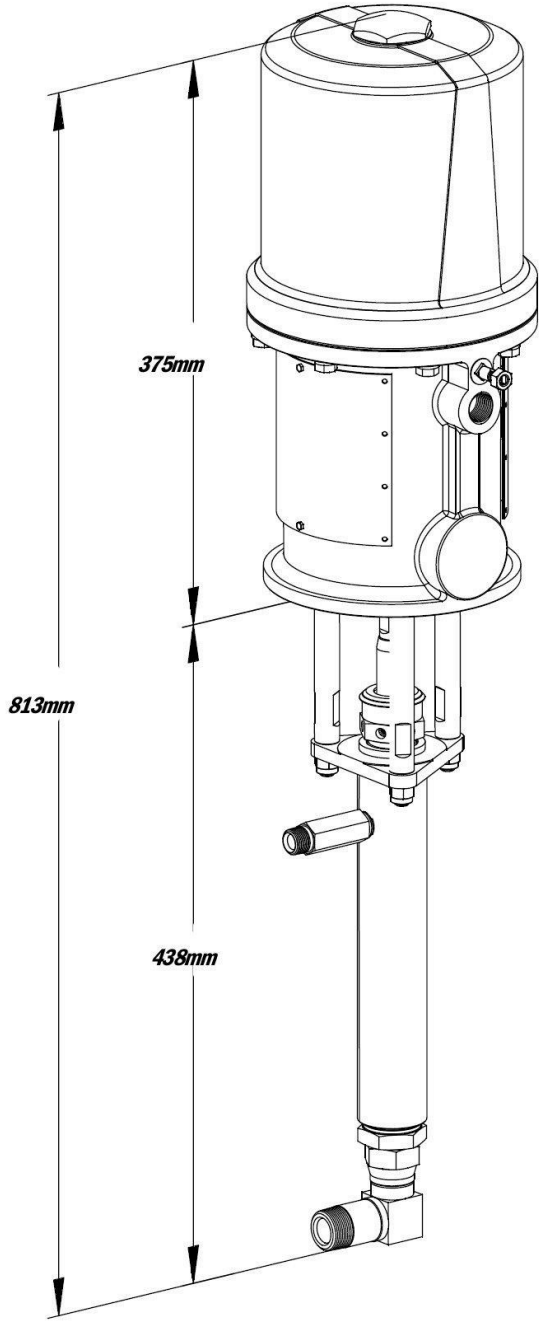


No	D Part	G Part	Description	Qty
1	S303-001	172-831	BOWL, stainless	1
2	S302-002	171-942	SPRING,compression	1
3	S302-003	167-025	SCREEN, 60 mesh	1
4	S302-004	186-075	SUPPORT, filter	1
5	S302-005	104-361	O-RING, filter	1
6	S305-006	185-631	HOUSING, stainless	1
7	S302-007	.	NIPPLE	1
8	S302-008	.	SWIVEL MALE	1
9	S302-009	.	NIPPLE	1
10	S302-010	.	PLUG	1
11	AHBV-014	.	BALL VALVE	1
12	S302-012	.	HOSE NIPPLE	1

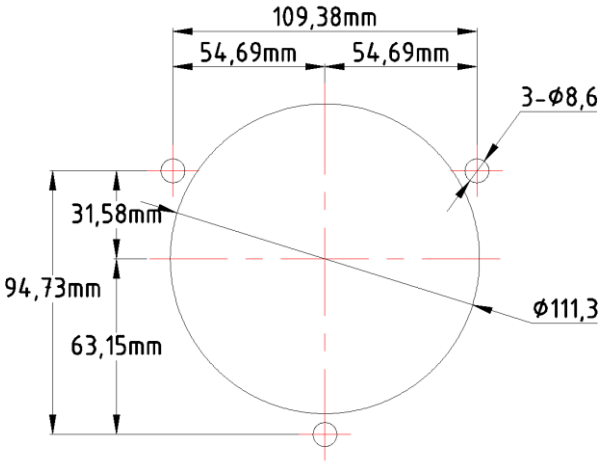
Technical Data

Maximum fluid working pressure	3600 psi (25.0 MPa, 250 bar. . .
Maximum air input pressure	120 psi (0.8 MPa, 8 bar.
Pump cycles per 1 gallon (3.8 litres)	60.
Maximum flow at 60 cycles/min	1 gallon (3.8 litres) ..
Recommended speed for optimum pump life	15–25 cycles/min;.
	0.25 to 0.42 gpm (0.9 to 1.6 litres/min)
Air consumption	approx. 35 cfm (0.98 min)
	at 1 gpm (3.8 litres/min) at 100 psi (0.7 MPa, 7 bar)
Weight approx.	25 Kg (Mounted on Cart)

Dimensions



Mounting Hole Layout



Storm Machinery Standard Warranty

Storm Machinery warrants all equipment referenced in this document which is manufactured by Storm Machinery and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Storm Machinery, Storm Machinery will, for a period of six months from the date of sale, repair or replace any part of the equipment determined by Storm Machinery to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Storm Machinery's written recommendations.

This warranty does not cover, and Storm Machinery shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of

non-Storm Machinery component parts. Nor shall Storm Machinery be liable for malfunction, damage or wear caused by the incompatibility of Storm Machinery equipment with structures, accessories, equipment or materials not supplied by Storm Machinery, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Storm Machinery.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Storm Machinery distributor for verification of the claimed defect. If the claimed defect is verified, Storm Machinery will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labour, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED
TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Storm Machinery's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy

(including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or

consequential loss) shall be available. Any action for breach of warranty must be brought within six months of the date of sale.

Storm Machinery MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT
MANUFACTURED BY Storm Machinery.
These items sold, but not manufactured by Storm Machinery (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Storm Machinery will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Storm Machinery be liable for indirect, incidental, special or consequential damages resulting from Storm Machinery supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Storm Machinery, or otherwise.

FOR NON-ENGLISH SPEAKING CUSTOMERS
The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into,
given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English.

FRENCH
Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

SPANISH
Las partes reconocen haber convenido en que la redacción de este documento será en Inglés, así como todos los documentos, notificaciones y procedimientos judiciales emprendidos, dados o incoados como consecuencia de o en relación directa o indirectamente con los procedimientos pertinentes.

PORTUGUESE
As partes reconhecem que eles concordaram que a elaboração deste documento será em Inglês, bem como todos os documentos, notas e processos legais inseridos, atribuídos ou instituídos, como resultado de ou em conexão direta ou indiretamente com os procedimentos pertinentes.

ARABIC
يعترف الطرفان أنهما اتفقا على أن صياغة هذه الوثيقة سوف تكون باللغة الإنجليزية، وكذلك جميع الوثائق والإشعارات والإجراءات القانونية التي أبرمت، عينا أو ضمنت تنتج أو فيما يتعلق بصورة مباشرة أو غير مباشرة مع الإجراءات ذات الصلة.

All written and visual data contained in this document reflects the latest product information available at the time of publication.
Storm Machinery reserves the right to make changes at any time without notice.

Storm Machinery CC.

SOUTH AFRICA
www.stormmachinery.co.za
104014 S
2014

Notes