



# High-Flo<sup>®</sup> Pumps

311211M

ENG

***Designed for low pressure, medium volume circulation of finishing materials.  
Do not use with caustics, acids, abrasive line strippers, and other similar fluids.  
For professional use only.***



**Important Safety Instructions**

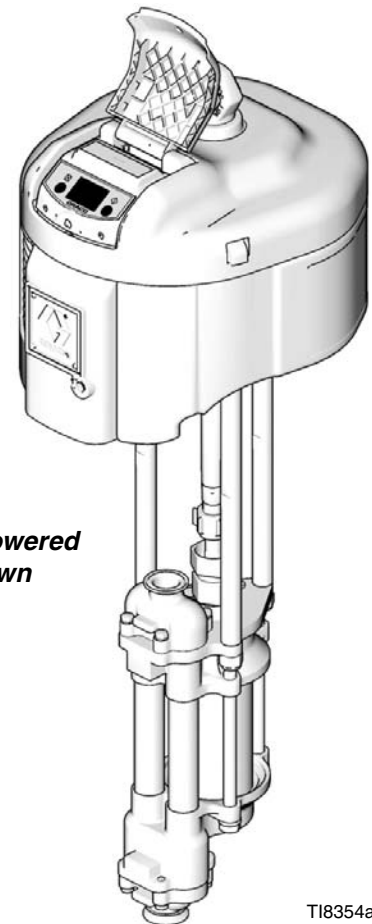
Read all warnings and instructions in this manual.  
Save these instructions.

See page 2 for **Table of Contents** and page 3 for **List of Models**.

See page 25 for **Maximum Working Pressures**.

Related Manuals	
Part No.	Description
311238	NXT Air Motor manual
308330	Viscount I Plus Hydraulic Motor manual
311690	High-Flo Lower manual
308048	Viscount II Hydraulic Motor manual

Patent Pending



***NXT Air-Powered  
Pump Shown***

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# Models

## NXT Air-Powered Pumps

Your model number is marked on the pump identification plate located toward the rear of the air motor. To determine the model number of your pump from the following matrix, select the six digits which describe your pump. The first digit is always J for circulation pumps. The remaining five digits define the construction. For example, a circulation pump with carbon steel construction, a 2.0:1 ratio, low noise exhaust, no communication option, npt fittings, and chrome rod and cylinder is model number **J C 20 L 1**. To order replacement parts, see page 18.

<b>J</b>	<b>C</b>	<b>20</b>				<b>L</b>			<b>1</b>			
<b>First Digit</b>	<b>Second Digit</b>		<b>Third and Fourth Digit</b>				<b>Fifth Digit</b>			<b>Sixth Digit</b>		
		<b>Material</b>	<b>Motor Size</b>	<b>Lower Size</b>	<b>Maximum Fluid Pressure psi (MPa, bar)</b>		<b>Exhaust</b>	<b>Communi- cation</b>		<b>Fittings</b>	<b>Rod and Cylinder</b>	
<b>J</b> (all circulation pumps)	<b>C</b>	Carbon Steel	<b>20</b>	2200	2000	200 (1.4, 14.0)	<b>L</b>	Low Noise	none	<b>1</b>	npt	Chromex/ Chrome
	<b>S</b>	Stainless Steel	<b>30</b>	2200	1500	300 (2.1, 21.0)	<b>M</b>	Low Noise	DataTrak™	<b>2</b>	npt	Chromex/ MaxLife
			<b>35</b>	3400	2000	340 (2.3, 23.0)	<b>R</b>	Remote	none	<b>3</b>	bspp*	Chromex/ Chrome
			<b>40</b>	2200	1000	400 (2.8, 28.0)	<b>S</b>	Remote	DataTrak™	<b>4</b>	bspp*	Chromex/ MaxLife
			<b>45</b>	3400	1500	460 (3.2, 32.0)				<b>5</b>	tri- clamp	Chromex/ Chrome
			XX = X.X:1 ratio							<b>6</b>	tri- clamp	Chromex/ MaxLife
										<b>7</b>	npt	Chromex/ Nitride

## Viscount I Plus Hydraulic-Powered Pumps

Model No.	Series	Maximum Pump Working Pressure psi (MPa, bar)	Connection Style	Material	Rod Material	Cylinder Material	High-Flo Lower (see manual 311690)
253642	A	300 (2.1, 21)	npt	sst	Chromex	Chrome	253033
253643	A	225 (1.6, 16)	npt	sst	Chromex	Chrome	253034
24E787	A	300 (2.1, 21)	npt	sst	Chromex	Chrome	24E783
24E788	A	225 (1.6, 16)	npt	sst	Chromex	Chrome	24E784
253644	A	300 (2.1, 21)	npt	sst	Chromex	MaxLife	253568
253645	A	225 (1.6, 16)	npt	sst	Chromex	MaxLife	253569
253646	A	300 (2.1, 21)	npt	cst	Chromex	Nitride	253061
253647	A	225 (1.6, 16)	npt	cst	Chromex	Nitride	253062
253648	A	300 (2.1, 21)	bspp*	sst	Chromex	Chrome	253423
253649	A	225 (1.6, 16)	bspp*	sst	Chromex	Chrome	253085
253650	A	300 (2.1, 21)	bspp*	sst	Chromex	MaxLife	253398
253651	A	225 (1.6, 16)	bspp*	sst	Chromex	MaxLife	253397
253652	A	300 (2.1, 21)	tri-clamp	sst	Chromex	Chrome	253520
253653	A	225 (1.6, 16)	tri-clamp	sst	Chromex	Chrome	253521
253654	A	300 (2.1, 21)	tri-clamp	sst	Chromex	MaxLife	253523
253655	A	225 (1.6, 16)	tri-clamp	sst	Chromex	MaxLife	253524

\*BSPP models require inlet and outlet seals to perform optimally. See Accessories, page 9.





## Viscount II Hydraulic Powered Pumps





Model No.	Series	Maximum Pump Working Pressure psi (MPa, bar)	Connection Style	Material	Rod Material	Cylinder Material	High-Flo Lower (see manual 311690)
247355	A	460 (3.2, 32)	npt	sst	Chromex	Chrome	253035
24E786	A	460 (3.2, 32)	npt	sst	Chromex	Chrome	24E785
247356	A	460 (3.2, 32)	npt	cs	Chromex	Chrome	253063
247357	A	460 (3.2, 32)	bspp*	sst	Chromex	Chrome	253086
247358	A	460 (3.2, 32)	bspp*	sst	Chromex	MaxLife	253396
247359	A	460 (3.2, 32)	tri-clamp	sst	Chromex	Chrome	253522
247360	A	460 (3.2, 32)	tri-clamp	sst	Chromex	MaxLife	253525
247361	A	460 (3.2, 32)	npt	sst	Chromex	MaxLife	253570

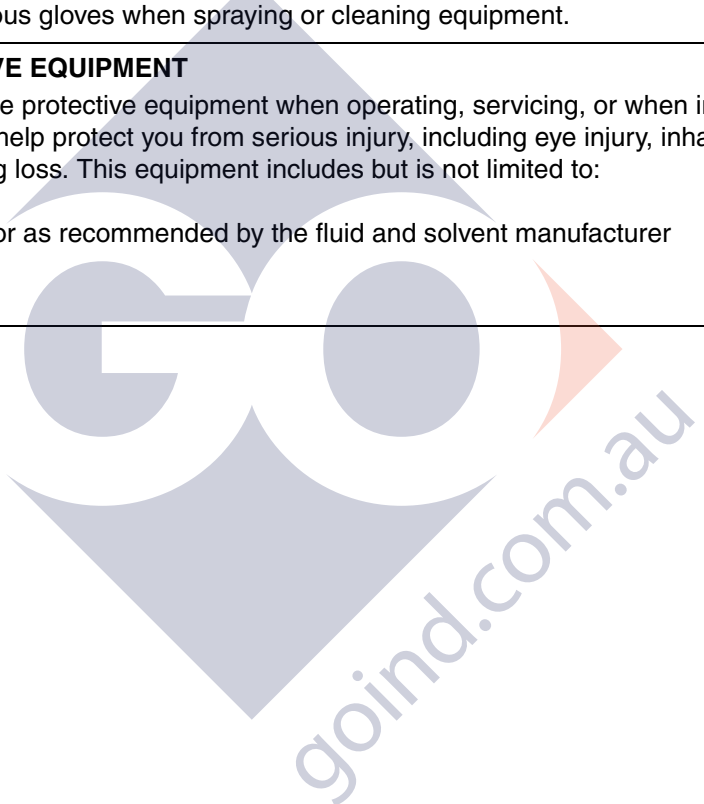
\*BSPP models require inlet and outlet seals to perform optimally. See Accessories, page 9.

# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

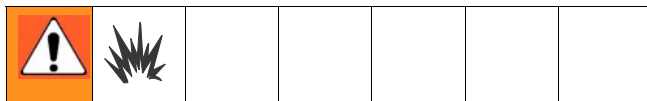
 <b>WARNING</b>	
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions.</li> <li>• Use only grounded hoses.</li> <li>• Hold gun firmly to side of grounded pail when triggering into pail.</li> <li>• If there is static sparking or you feel a shock, <b>stop operation immediately</b>. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>
	<p><b>PRESSURIZED EQUIPMENT HAZARD</b></p> <p>Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"> <li>• Follow <b>Pressure Relief Procedure</b> in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Data</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. See <b>Technical Data</b> in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.</li> <li>• Do not alter or modify equipment.</li> <li>• Use equipment only for its intended purpose. Call your distributor for information.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or over bend hoses or use hoses to pull equipment.</li> <li>• Keep children and animals away from work area.</li> <li>• Comply with all applicable safety regulations.</li> </ul>

 <b>WARNING</b>	
	<p><b>MOVING PARTS HAZARD</b></p> <p>Moving parts can pinch or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> <li>• Keep clear of moving parts.</li> <li>• Do not operate equipment with protective guards or covers removed.</li> <li>• Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the <b>Pressure Relief Procedure</b> in this manual. Disconnect power or air supply.</li> </ul>
	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> <li>• Read MSDS's to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> <li>• Always wear impervious gloves when spraying or cleaning equipment.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear</li> <li>• Clothing and respirator as recommended by the fluid and solvent manufacturer</li> <li>• Gloves</li> <li>• Hearing protection</li> </ul>



# Installation

## Grounding



The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.

**Pump:** Use a ground screw (Z) and lockwasher on the motor to attach ground wire 244524 (Y). Tighten the screw securely. Connect the other end of the ground wire to a true earth ground. See FIG. 1.

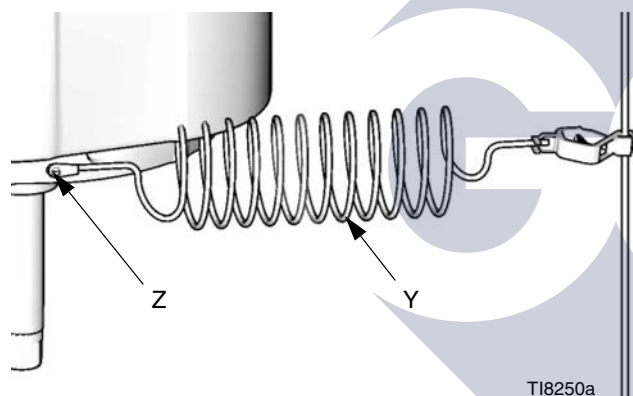


FIG. 1

**Air and fluid hoses:** use only electrically conductive hoses with a maximum of 500 ft. (150 m) combined hose length to ensure grounding continuity. Check the electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.

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

**Hydraulic power supply:** follow manufacturer's recommendations.

**Surge tank:** use a ground wire and clamp.

**Spray gun:** ground through a connection to a properly grounded fluid hose and pump.

**Fluid supply container:** follow local code.

**Object being sprayed:** follow local code.

**Solvent pails used when flushing:** follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.


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

## Accessories

Install the following accessories in the order shown in FIG. 2 and FIG. 3, using adapters as necessary.





### Air-Powered Pumps

For typical installation, see FIG. 2 on page 10.



 Accessory Air Control Kits are available for the NXT Air Motor. The kits include a master air valve, air regulator, and filter. Order the kits separately. See manual 311239 for more information.

#### Air Line

- **Bleed-type master air valve (M):** required in your system to relieve air trapped between it and the air motor when the valve is closed.

							
Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing or moving parts.							

Be sure the valve is easily accessible from the pump and located downstream from the air regulator. Be sure the air bleed hole points away from the operator.

							
The air motor is rated to 100 psi (0.7 MPa, 7.0 bar). If you will apply more than 100 psi (0.7 MPa, 7.0 bar) to the system, install a safety relief valve between the bleed-type master air valve and the air motor.							

- **Pump air regulator (L):** to control pump speed and outlet pressure. Locate close to the pump.
- **Air line filter (K):** removes harmful dirt and moisture from compressed air supply.
- **Second bleed-type air valve (M):** isolates air line accessories for servicing. Locate upstream from all other air line accessories.

## Hydraulic-Powered Pumps

For typical installation, see FIG. 3 on page 11.

### Hydraulic Power Supply

CAUTION
The hydraulic power supply must be kept clean at all times to avoid damage to the motor and hydraulic power supply.
1. Blow out hydraulic lines with air and flush thoroughly before connection to the motor.
2. Plug hydraulic inlets, outlets, and line ends when disconnecting them for any reason.

Be sure the power supply can provide sufficient power to the motor. Be sure the power supply is equipped with a suction filter to the hydraulic pump.

### Hydraulic Supply Line

- For Viscount I Plus motors, the hydraulic inlet on the motor is 3/4 in., 37° flare. Use a minimum 1/2 in. (13 mm) ID hydraulic supply line (K).
- For Viscount II motors, use a minimum 13 mm (1/2 in.) ID supply line supply line (K). The motor has a 3/4 npt(f) hydraulic oil supply fitting.

- **Supply line shutoff valve (S):** isolates the motor when servicing the system. See FIG. 3.
- **Hydraulic fluid pressure gauge (P):** monitors the hydraulic oil pressure to the motor to avoid over-pressurizing the motor or lower.
- **Pressure- and temperature-compensated flow control valve (T):** prevents the motor from running too fast, which can damage it.
- **Pressure reducing valve (N), which has a drain line (M) running to the return line (K):** controls the hydraulic pressure to the motor.



### Hydraulic Return Line



- For Viscount I Plus motors, the hydraulic outlet on the motor is 7/8 in., 37° flare. Use a minimum 5/8 in. (16 mm) ID hydraulic return line (J).
- For Viscount II motors, use a minimum 22 mm (7/8 in.) ID return line (J). The motor has a 1 in. npt(f) hydraulic oil return fitting.

- **Return line shutoff valve (R):** isolates the motor when servicing the system.

**CAUTION**

To avoid damage to the pump, never use the return line shutoff valve to control the hydraulic flow. Do not install any flow control devices on the hydraulic return line.

- **Return fluid filter (J):** removes residue from the hydraulic fluid to help keep the system running smoothly (10 micron size).

### All Pumps

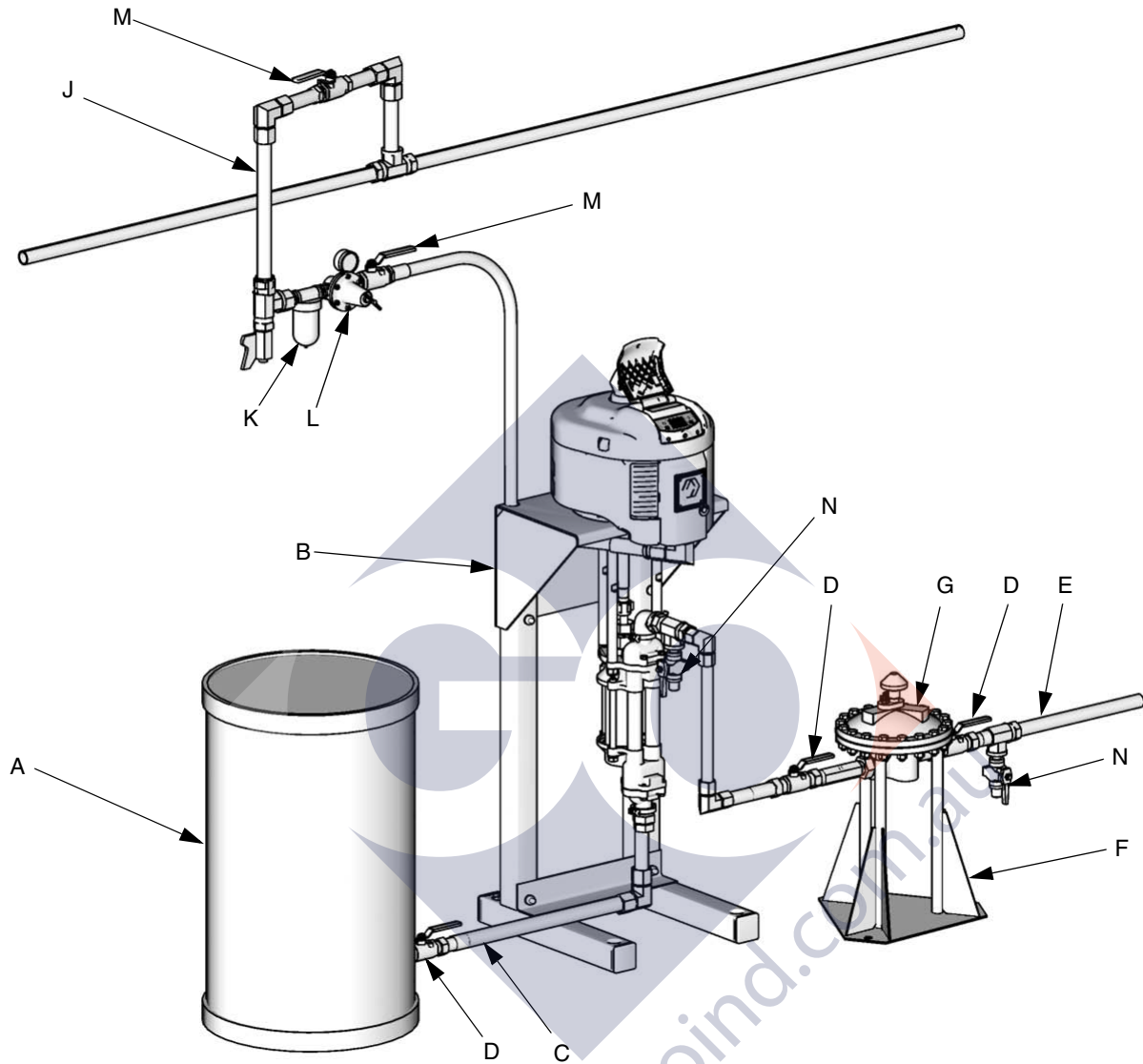
#### Fluid Line

- **Fluid filter:** with a 60 mesh (250 micron) stainless steel element to filter particles from the fluid as it leaves the pump.
- **Fluid drain valve (U):** required in your system, to relieve fluid pressure in the hose and gun.



- **Fluid shutoff valve (D):** shuts off fluid flow.
- **Fluid pressure regulator:** for more precise adjustment of the fluid pressure.
- **Gun or valve:** to dispense fluid.
- **Fluid line swivel:** for easier gun movement.
- **Suction kit:** enables the pump to draw fluid from a container.
- **Inlet and outlet seals:** prevent leakage in BSPP models. Order 193423 for 1-1/2 in. inlet seal and 193422 for 1-1/4 in. outlet seal.

## Air-Powered Pumps Typical Installation



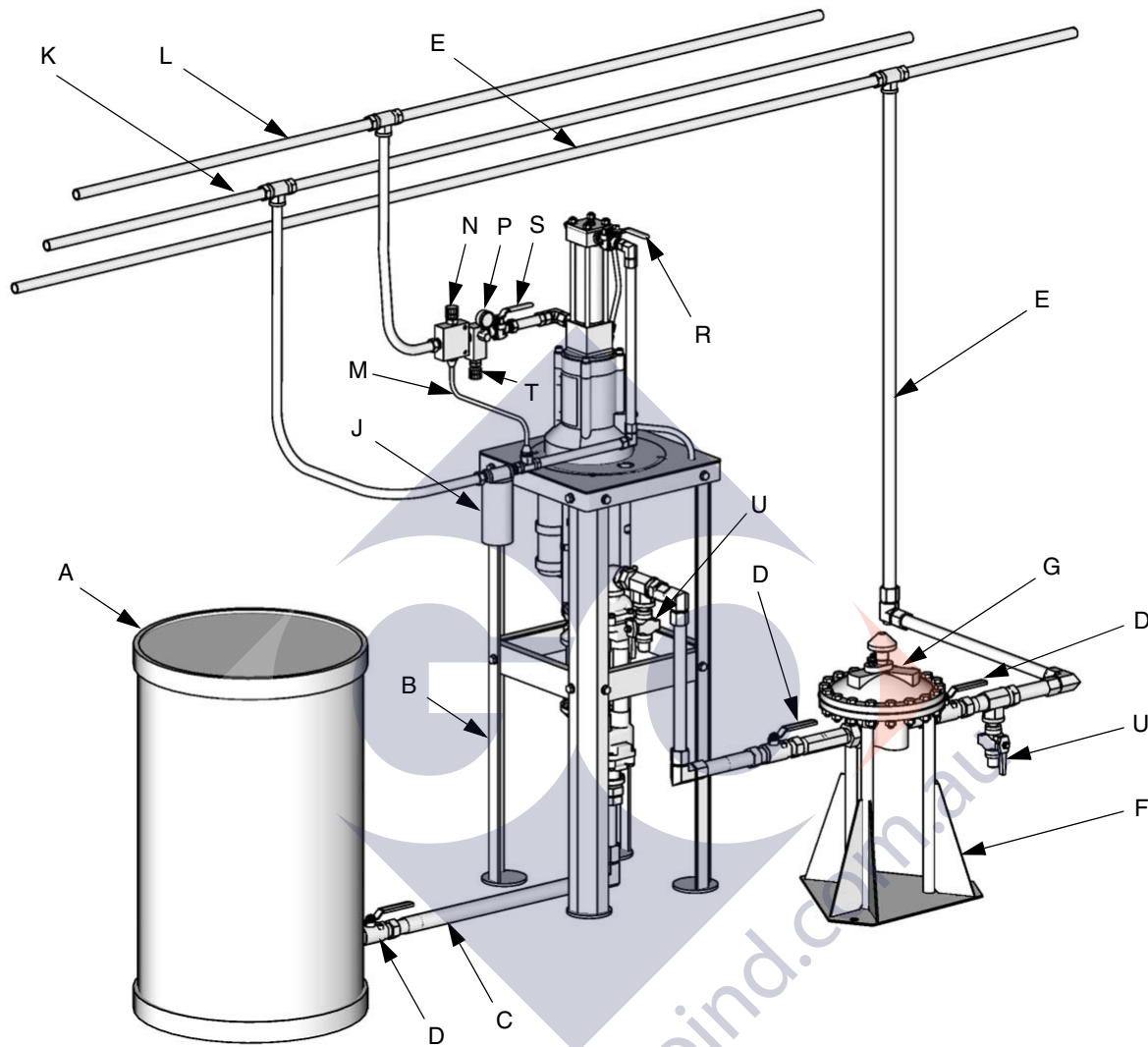
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**FIG. 2: Typical Installation**

**Key:**

- A Mix Tank
- B Pump Stand
- C Fluid Supply Line; 1-1/2 in. (38 mm) minimum diameter
- D Fluid Shutoff Valve
- E Fluid Line; 1 in. (25 mm) minimum diameter
- F Surge Tank Stand
- G Surge Tank
- H Ground Wire (required, see page 7 for installation)
- J Air Supply Line
- K Air Line Filter
- L Air Regulator and Gauge
- M Bleed-Type Master Air Valve (required)
- N Fluid Drain Valve (required)

## Hydraulic-Powered Pumps Typical Installation



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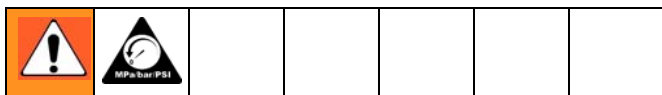
**FIG. 3: Typical Installation**

**Key:**

- |   |   |   |  |
|---|---|---|--|
| A | Mix Tank  | U | Fluid Drain Valve (required)                       |
| B | Pump Stand  | Y | Ground Wire (required see page 7 for installation) |
| C | Fluid Supply Line; 1-1/2 in. (38 mm) minimum diameter   |   |  |
| D | Fluid Shutoff Valve                                     |   |  |
| E | Fluid Line; 1 in. (25 mm) minimum diameter              |   |  |
| F | Surge Tank Stand  |   |  |
| G | Surge Tank  |   |  |
| J | 10 Micron Return Filter                                 |   |  |
| K | Hydraulic Return Line; 5/8 in. (16 mm) minimum diameter |   |  |
| L | Hydraulic Supply Line; 1/2 in. (13 mm) minimum diameter |   |  |
| M | Drain Line  |   |  |
| N | Pressure Reducing Valve                                 |   |  |
| P | Hydraulic Pressure Gauge                                |   |  |
| R | Return Line Shutoff Valve                               |   |  |
| S | Supply Line Shutoff Valve                               |   |  |
| T | Flow Control Valve                                      |   |  |

# Operation

## Pressure Relief Procedure



1. Engage trigger lock.
2. *Air-Powered Pumps only:* Close the bleed-type master air valve.  
  
*Hydraulic-Powered Pumps only:* Shut off the hydraulic supply line valve (S) first, then the return line valve (R).
3. Disengage the trigger lock.
4. Hold a metal part of the gun firmly to a grounded metal pail. Trigger the gun to relieve pressure.
5. Engage the trigger lock.
6. Open all fluid drain valves in the system, having waste containers ready to catch drainage. Leave the drain valves open until you are ready to spray again.
7. If you suspect the spray tip or hose is 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 to relieve pressure gradually, then loosen completely. Clear hose or tip obstruction.

CAUTION
<i>Hydraulic-Powered Pumps only:</i> When shutting down the hydraulic system, always shut off the hydraulic supply line shutoff valve (S) first, and then the return line shutoff valve (R) to prevent overpressurizing the motor or its seals. When starting the hydraulic system, open the return line shutoff valve first.

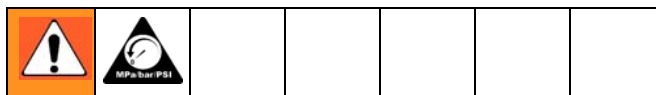
## Flush Before Using Equipment

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment. See **Flushing**, page 13.

## Trigger Lock

Always engage the trigger lock when you stop spraying to prevent the gun from being triggered accidentally by hand or if dropped or bumped.

## Pump Operation



- In a circulation system, the pump operates continuously until the power supply is shut off.

CAUTION
Do not allow the pump to run quickly for a long period of time as this may damage the packings.

- In a direct-supply system, the pump starts when the gun is opened, and stops when the gun is closed.
- Perform a stall test periodically to ensure the piston seal is in good working condition and prevent system overpressurization:
- Close the fluid shutoff valve (D) closest to the pump on the downstroke and be sure that the pump stalls. Open the fluid shutoff valve to restart the pump. Close the fluid shutoff valve (D) closest to the pump on the upstroke and be sure that the pump stalls.

## Stop the Pump at the Bottom of Its Stroke



Relieve the pressure when you stop the pump for any reason. Stop the pump on the downstroke, before the air motor changes over.

CAUTION
Failure to stop the pump at the bottom of its stroke allows fluid to dry on the piston rod, which can cause damage to the throat packings when the pump is restarted.

- Hydraulic-Powered Pumps only:* Always shut off the supply line shutoff valve (S) first, and then the return line shutoff valve (R). This is to prevent overpressurizing the motor or its seals.

# Maintenance

## Preventive Maintenance Schedule

The operating conditions of your particular system determine how often maintenance is required. Establish a preventive maintenance schedule by recording when and what kind of maintenance is needed, and then determine a regular schedule for checking your system. Your maintenance schedule should include the following:

### Flushing

- Flush before shutting down the system for an extended period of time.
- Flush before repairing the pump, if possible.
- Flush before fluid can dry out, settle, or set up in the equipment.

### Air Line Filter

Drain and clean as necessary.

### Hydraulic Power Supply Check

Carefully follow the hydraulic power supply manufacturer's recommendations on reservoir and filter cleaning, and periodic changes of hydraulic fluid.

### Mix Tank Volume

Don't let the mix tank run dry. When the tank is empty, the pump demands more power as it tries to suck in some fluid. This causes the pump to run too fast, which can seriously damage the pump.

### Packing Nut Tightness

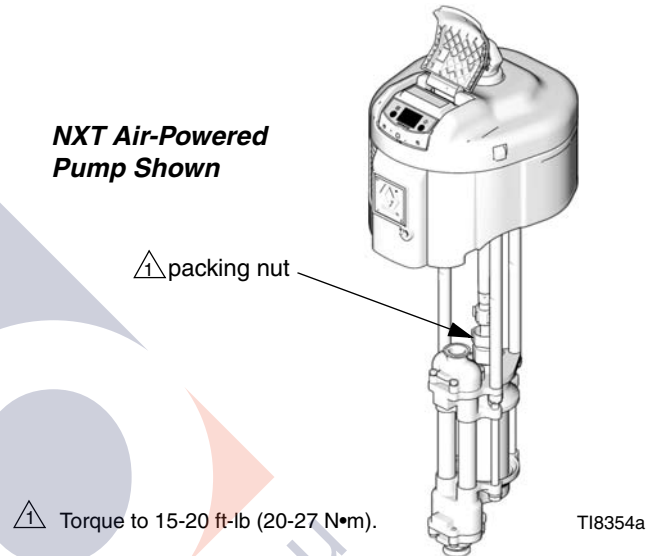
Check the packing nut (21) tightness every few days at startup and then weekly throughout the life of the throat seal. The packing nut should be tight enough to stop leakage, but no tighter. See FIG. 4.

To check the adjustment of the packing nut, stop the pump and relieve fluid pressure. Loosen the packing nut until it turns freely. Tighten the nut firmly and then turn the nut another 1/4 turn. If you have a torque wrench, tighten the packing nut to 30 ft-lb (40 N•m), then back off and re-tighten to 15-20 ft-lb (20-27 N•m).

## Excessive Leaking at Throat

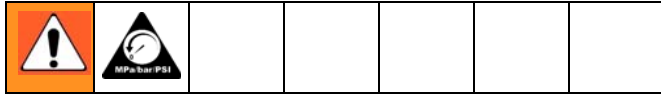
If you see excessive leaking at the throat, tighten the packing nut (21), see FIG. 4. If this does not fix the problem, replace the throat packings, piston rod, or both See manual 311690.

**NXT Air-Powered Pump Shown**



**FIG. 4**


# Troubleshooting



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


PROBLEM	CAUSE	SOLUTION
Pump output low on both strokes.	Restricted air or hydraulic supply lines.	Clear any obstructions; be sure all shutoff valve are open; increase pressure, but do not exceed maximum working pressure.
	Exhausted fluid supply.	Refill and reprime pump.
	Clogged fluid outlet line, valves, etc.	Clear.
	Worn piston packing.	Replace. See lower manual 311690.
Pump output low on only one stroke.	Held open or worn ball check valves.	Check and repair.
	Worn piston packings.	Replace. See lower manual 311690.
Pump operates erratically.	Exhausted fluid supply.	Refill and reprime pump.
	Held open or worn ball check valves.	Check and repair.
	Worn piston packing.	Replace. See lower manual 311690.
	Excessive hydraulic fluid supply pressure to Viscount motor.	See Viscount I Plus motor manual 308330 or Viscount II manual 308048.
Pump will not operate.	Restricted air or hydraulic supply lines.	Clear any obstructions; be sure all shut off valves are open; increase pressure, but do not exceed maximum working pressure.
	Exhausted fluid supply.	Refill and reprime pump.
	Clogged fluid outlet line, valves, etc.	Clear.
	Damaged air motor or hydraulic motor.	See air motor manual 311238 or hydraulic motor manual 308330 or 308048.
	Fluid dried on piston rod.	Disassemble and clean pump. See lower manual 311690. In future, stop pump at bottom of stroke.
Pump will not prime	Suction line clogged.	Clear. Flush more frequently.
	Held open or worn ball check valves.	Check and repair.
	Piston assembled with wrong nut.	Use only the large, round, special nut.
Excessive throat leakage.	Worn piston rod or throat packings.	Replace. See lower manual 311690.
Pump will not stall when fluid is shut off.	Worn ball check valves.	Check and repair.
	Worn piston packing.	Replace. See lower manual 311690.

# Repair

-  To service the lower, see manual 311690.
- To service the air motor, see manual 311238.
- To service the Viscount I Plus hydraulic motor, see manual 308330.
- To service the Viscount II hydraulic motor, see manual 308048.

## Disconnect the Lower


To service the lower, follow the procedure on this page, and disassemble the pump as described in manual 311690. To disconnect pump from an electric circulation assembly, EPXXXX, see manual 311594.

-  In stand or wall-mounted installations, you do not have to remove the entire pump from its mounting.



1. Relieve the pressure, see Pressure Relief Procedure page 12.
2. Disconnect the hoses from the lower and plug the ends to prevent fluid contamination.
3. Loosen the coupling nut (K) and remove the collars (G). Remove the coupling nut from the piston rod (H). Unscrew the locknuts (B) from the tie rods (C). Pull the lower (D) off the motor (E). See FIG. 5 and FIG. 6.

## Reconnect the Lower

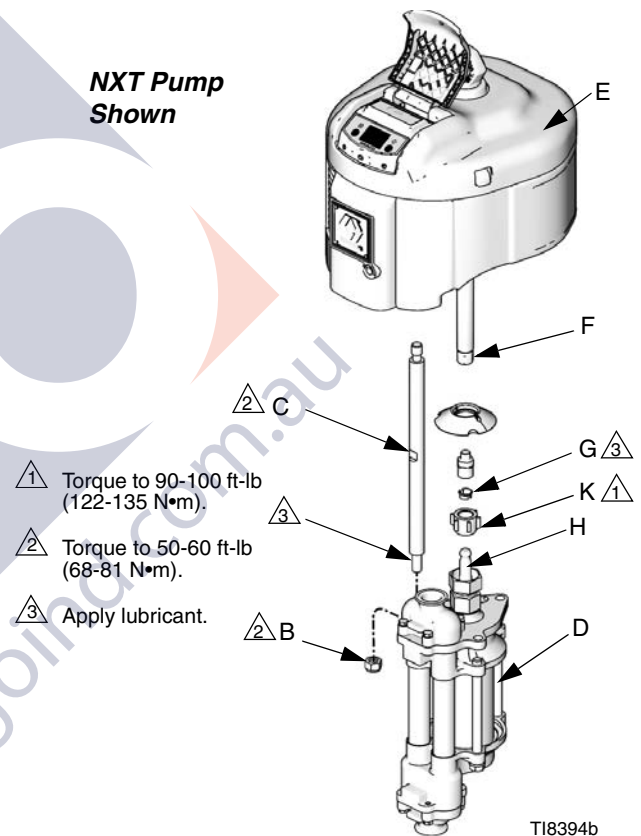
-  If the coupling rod (F) and tie rods (C) have been disassembled from the motor, see Reassemble the Coupling Rod and Tie Rods to the Motor on page 16.

1. Assemble the coupling nut (K) to the piston rod (H).
2. Orient the lower (D) to the motor (E). Position the lower on the tie rods (C). Lubricate the threads of the tie rods. Screw the tie rod locknuts (B) onto the

tie rods. Tighten the locknuts and torque to 50-55 ft-lb (68-75 N•m).

3. Insert the collars (G) into the coupling nut (K). Tighten the coupling nut onto the piston rod (H) and torque to 90-100 ft-lb (122-135 N•m).
4. Flush and test the pump before reinstalling it in the system. Connect hoses and flush the pump. While it is pressurized, check for smooth operation and leaks. Adjust or repair as necessary before reinstalling in the system. Reconnect the pump ground wire before operating.

**NXT Pump  
Shown**



**FIG. 5**

T18394b

**Viscount I Plus Pump Shown**

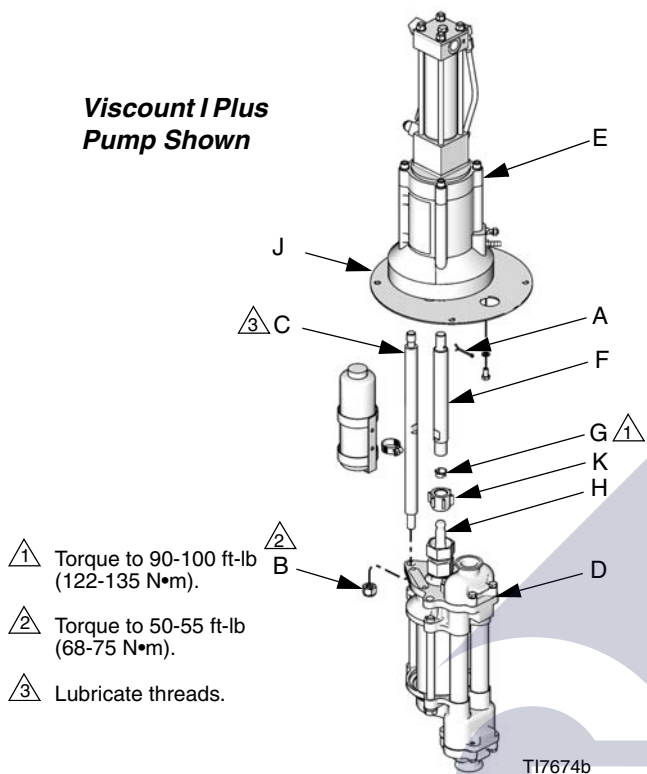


FIG. 6

## Reassemble the Coupling Rod and Tie Rods to the Motor

Use this procedure only if the coupling rod (F) and tie rods (C) have been disassembled from the motor, to ensure proper alignment of the motor shaft to the piston rod.

1. Loosen, but do not remove, the screws holding the adapter plate (J) to the motor (E), on Viscount I Plus pumps. See FIG. 6. For Viscount II pumps, torque screw (N) to 50-55 ft-lb (68-75 N•m) into motor (E).
2. Screw the tie rods (C) into the adapter plate (J) and torque to 50-55 ft-lb (68-75 N•m). On Viscount I Plus pumps, the tie rods will engage threaded holes in the base of the motor. Viscount II pumps will engage into the adapter plate (J).
3. Fill the cavity in the bottom of the motor shaft with grease. Screw the coupling rod (F) into the motor shaft until the pin holes align. Install the pin (A) in the first hole from the end of the coupling. On Viscount II pumps, torque the coupling nut (M) into the motor shaft.

4. Align the lower (D) with the tie rods (C) and loosely install the tie rod locknuts (B).
5. Insert the collars (G) and screw the coupling nut (K) onto the coupling rod (F) and torque to 90-100 ft-lb (122-135 N•m).
6. For Viscount I Plus pumps, torque the holding the adapter plate (J) to the motor (E) to 15-17 ft-lb (20-23 N•m). For Viscount I Plus and Viscount II pumps, torque the tie rod locknuts (B) to 50-55 ft-lb (68-75 N•m).

**Viscount II 460 Pump Shown**

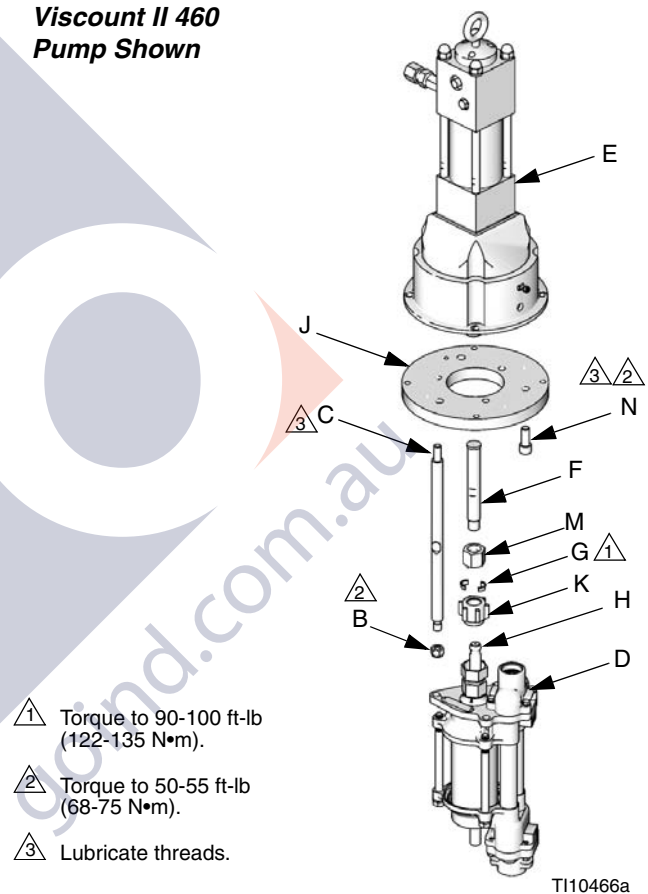


FIG. 7





A series of horizontal lines for writing, spanning the width of the page. The lines are evenly spaced and cover most of the page area.

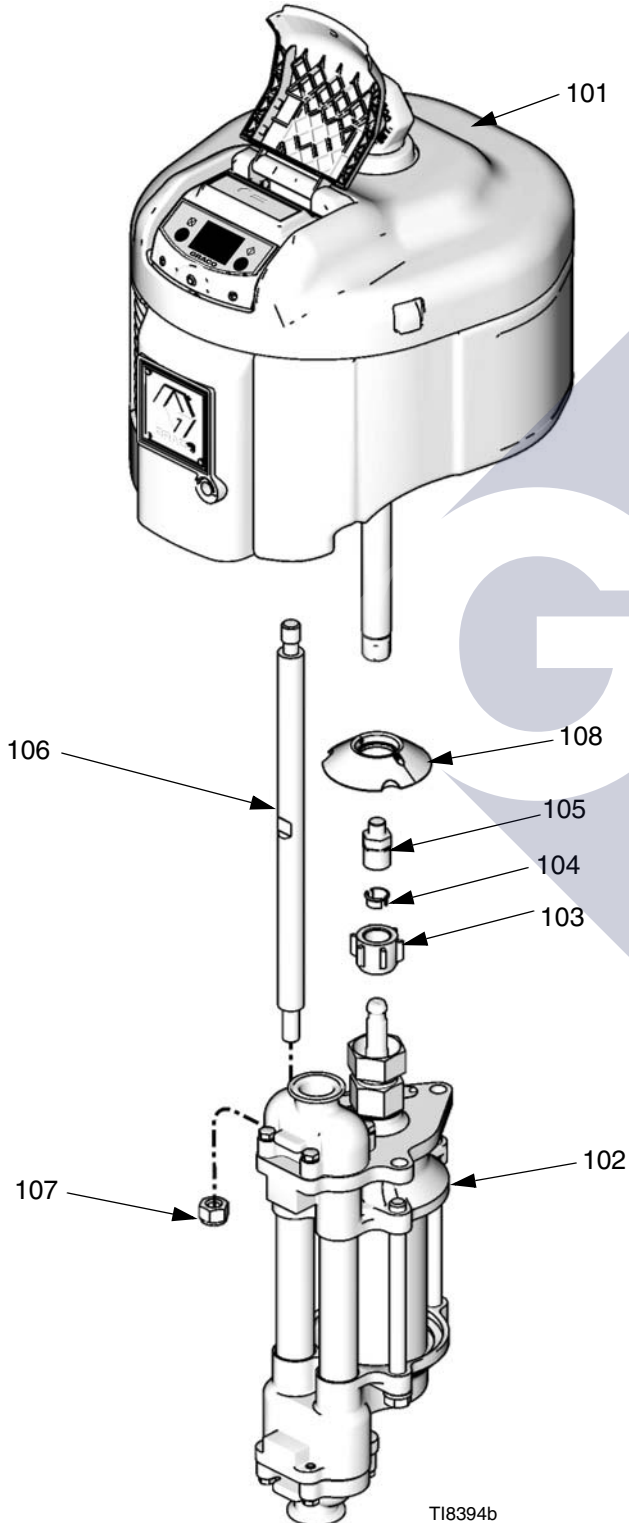


# Parts

## NXT Pumps

### Common Parts

Ref. No.	Description	Part No.	Qty.
101	MOTOR, NXT, see manual 311238	see table, page 19	1
102	LOWER, High-Flo, see manual 311690	see table, page 19	1
103	NUT, coupling	184059	1
104	COLLAR, coupling	184128	2
105	ADAPTER, coupling	15H369	1
106	TIE ROD, 14.25 in. (362 mm) between shoulders	15G924	3
107	NUT, lock, hex; 9/16-12 unc	108683	3
108	COVER, moisture	247362	1



## Parts That Vary by Model

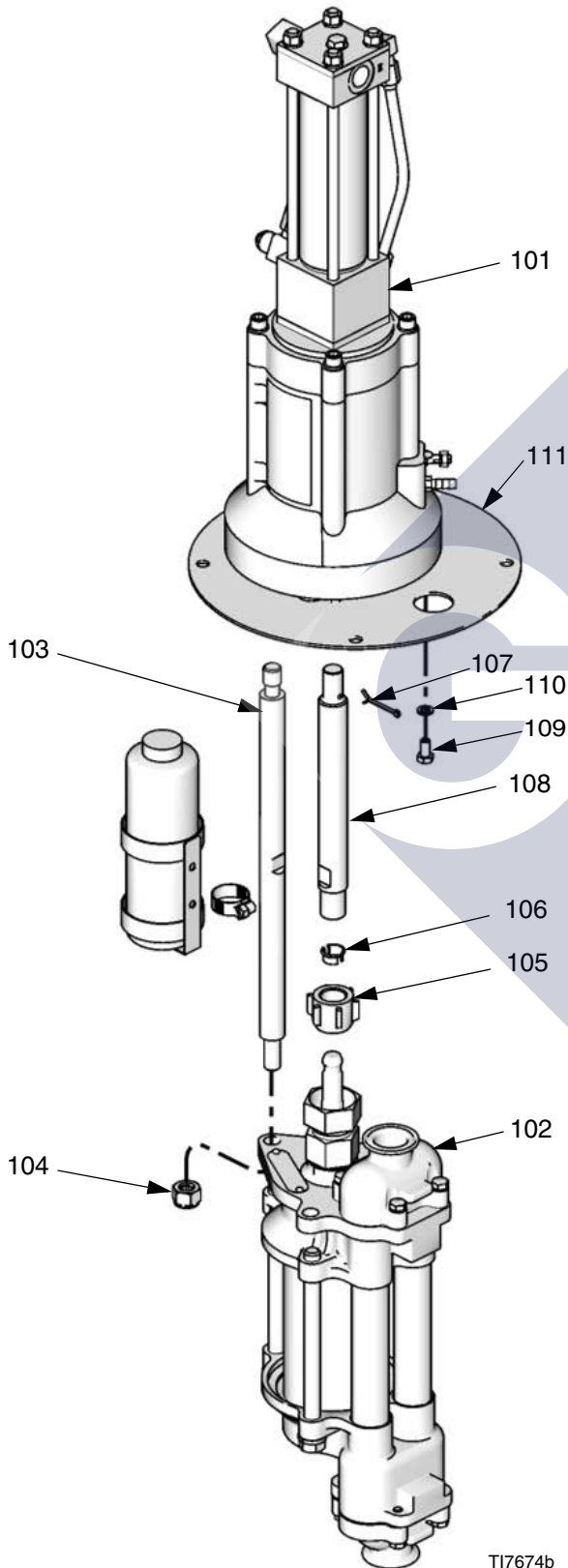
Air-Powered Pump (see page 3)	101	102
	NXT Air Motor (see manual 311238)	High-Flo Lower (see manual 311690)
JC20L1	N22LNO	253063
JC20M1	N22LTO	253063
JC30L7	N22LNO	253062
JC30M7	N22LNO	253062
JC35L1	N34LNO	253063
JC35M1	N34LTO	253063
JC40L7	N22LNO	253061
JC40M7	N22LTO	253061
JC45L7	N34LNO	253062
JC45M7	N34LTO	253062
JS20L1	N22LNO	253035
JS20L2	N22LNO	253570
JS20L3	N22LNO	253086
JS20L4	N22LNO	253396
JS20L5	N22LNO	253522
JS20L6	N22LNO	253525
JS20M1	N22LTO	253035
JS20M2	N22LTO	253570
JS20M3	N22LTO	253086
JS20M4	N22LTO	253396
JS20M5	N22LTO	253522
JS20M6	N22LTO	253525
JS20R1	N22RNO	253035
JS20R2	N22RNO	253570
JS20R3	N22RNO	253086
JS20R4	N22RNO	253396
JS20R5	N22RNO	253522
JS20R6	N22RNO	253525
JS20S1	N22RTO	253035
JS20S2	N22RTO	253570
JS20S3	N22RTO	253086
JS20S4	N22RTO	253396
JS20S5	N22RTO	253522
JS20S6	N22RTO	253525
JS30L1	N22LNO	253034
JS30L2	N22LNO	253569
JS30L3	N22LNO	253085
JS30L4	N22LNO	253397
JS30L5	N22LNO	253521
JS30L6	N22LNO	253524
JS30M1	N22LTO	253034
JS30M2	N22LTO	253569
JS30M3	N22LTO	253085
JS30M4	N22LTO	253397
JS30M5	N22LTO	253521
JS30M6	N22LTO	253524
JS30R1	N22RNO	253034
JS30R2	N22RNO	253569
JS30R3	N22RNO	253085
JS30R4	N22RNO	253397
JS30R5	N22RNO	253521
JS30R6	N22RNO	253524
JS30S1	N22RTO	253034
JS30S2	N22RTO	253569
JS30S3	N22RTO	253085
JS30S4	N22RTO	253397
JS30S5	N22RTO	253521
JS30S6	N22RTO	253524
JS35L1	N34LNO	253035

Air-Powered Pump (see page 3)	101	102
	NXT Air Motor (see manual 311238)	High-Flo Lower (see manual 311690)
JS35L2	N34LNO	253570
JS35L3	N34LNO	253086
JS35L4	N34LNO	253396
JS35L5	N34LNO	253522
JS35L6	N34LNO	253525
JS35M1	N34LTO	253035
JS35M2	N34LTO	253570
JS35M3	N34LTO	253086
JS35M4	N34LTO	253396
JS35M5	N34LTO	253522
JS35M6	N34LTO	253525
JS35R1	N34RNO	253035
JS35R2	N34RNO	253570
JS35R3	N34RNO	253086
JS35R4	N34RNO	253396
JS35R5	N34RNO	253522
JS35R6	N34RNO	253525
JS35S1	N34RTO	253035
JS35S2	N34RTO	253570
JS35S3	N34RTO	253086
JS35S4	N34RTO	253396
JS35S5	N34RTO	253522
JS35S6	N34RTO	253525
JS40L1	N22LNO	253033
JS40L2	N22LNO	253568
JS40L3	N22LNO	253423
JS40L4	N22LNO	253398
JS40L5	N22LNO	253520
JS40L6	N22LNO	253523
JS40M1	N22LTO	253033
JS40M2	N22LTO	253568
JS40M3	N22LTO	253423
JS40M4	N22LTO	253398
JS40M5	N22LTO	253520
JS40M6	N22LTO	253523
JS40R1	N22RNO	253033
JS40R2	N22RNO	253568
JS40R3	N22RNO	253423
JS40R4	N22RNO	253398
JS40R5	N22RNO	253520
JS40R6	N22RNO	253523
JS40S1	N22RTO	253033
JS40S2	N22RTO	253568
JS40S3	N22RTO	253423
JS40S4	N22RTO	253398
JS40S5	N22RTO	253520
JS40S6	N22RTO	253523
JS45L1	N34LNO	253034
JS45L2	N34LNO	253569
JS45L3	N34LNO	253085
JS45L4	N34LNO	253397
JS45L5	N34LNO	253521
JS45L6	N34LNO	253524
JS45M1	N34LTO	253034
JS45M2	N34LTO	253569
JS45M3	N34LTO	253085
JS45M4	N34LTO	253397
JS45M5	N34LTO	253521
JS45M6	N34LTO	253524

	101	102
<b>Air-Powered Pump (see page 3)</b>	<b>NXT Air Motor (see manual 311238)</b>	<b>High-Flo Lower (see manual 311690)</b>
JS45R1	N34RN0	253034
JS45R2	N34RN0	253569
JS45R3	N34RN0	253085
JS45R4	N34RN0	253397
JS45R5	N34RN0	253521
JS45R6	N34RN0	253524
JS45S1	N34RT0	253034
JS45S2	N34RT0	253569
JS45S3	N34RT0	253085
JS45S4	N34RT0	253397
JS45S5	N34RT0	253521
JS45S6	N34RT0	253524



# Viscount I Plus Pumps



## Common Parts

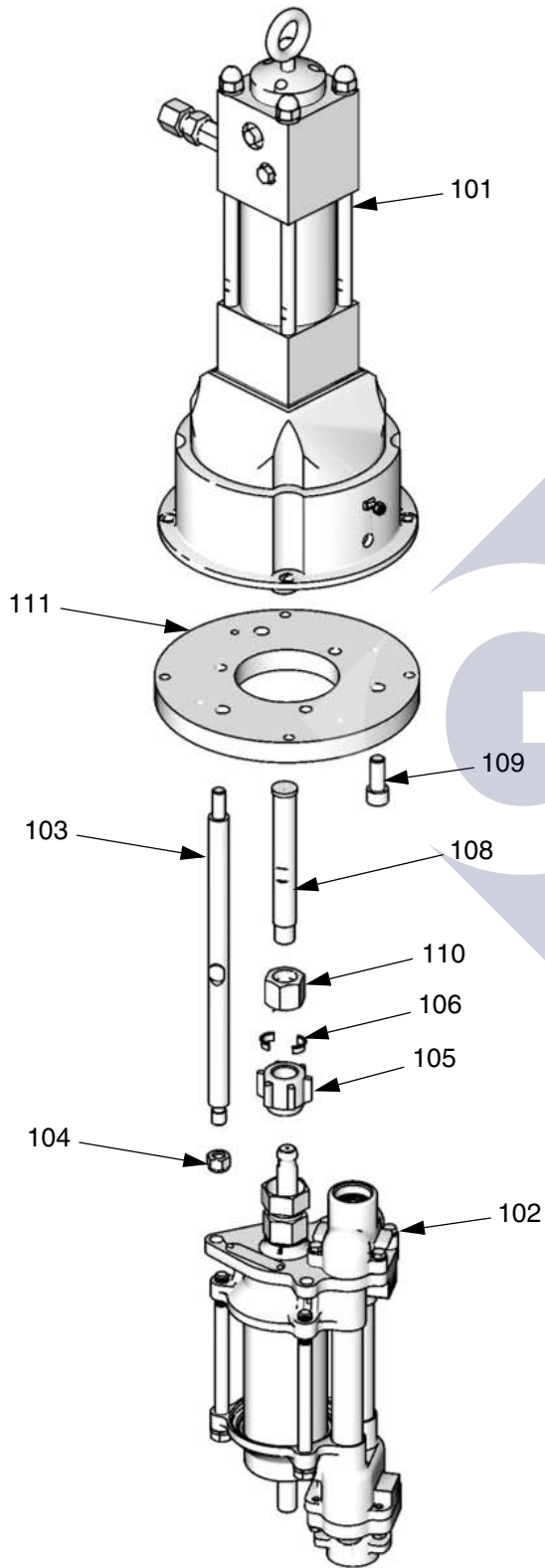
Ref. No.	Description	Part No.	Qty.
101	MOTOR, Viscount 1+, see manual 308330	261466	1
102	LOWER, High-Flo, see manual 311690	see table, below	1
103	TIE ROD, 14.25 in. (362 mm) between shoulders	15G924	3
104	NUT, lock, hex; 9/16-12 unc	108683	3
105	NUT, coupling	184059	1
106	COLLAR, coupling	184128	2
107	PIN, cotter	100103	1
108	ADAPTER, coupling	15H838	1
109	SCREW, cap	100001	4
110	WASHER, lock	100214	4
111	PLATE, adapter	189206	1

## Parts That Vary by Model

	102
Hydraulic-Powered Pump (see page 3)	High-Flo Lower (see manual 311690)
253642	253033
253643	253034
24E787	24E783
24E788	24E784
253644	253568
253645	253569
253646	253061
253647	253062
253648	253423
253649	253085
253650	253398
253651	253397
253652	253520
253653	253521
253654	253523
253655	253524

TI7674b

# Viscount II 460 Pumps



## Common Parts

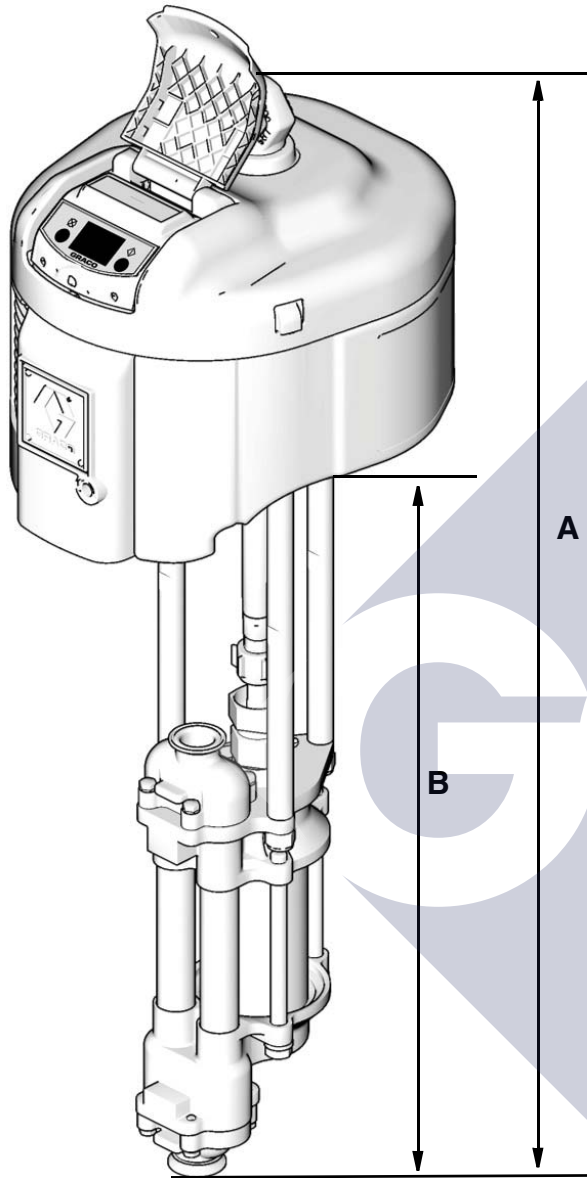
Ref. No.	Description	Part No.	Qty.
101	MOTOR, Viscount II, see manual 308048	223646	1
102	LOWER, High-Flo, see manual 311690	see table, below	1
103	TIE ROD, 14.25 in. (362 mm) between shoulders	15G924	3
104	NUT, lock, hex; 9/16-12 unc	108683	3
105	NUT, coupling	184059	1
106	COLLAR, coupling	184128	2
108	ADAPTER, coupling	15K736	1
109	SCREW, cap, socket hd	C19789	3
110	NUT, coupling	183079	1
111	BRACKET, mounting	120558	1

## Parts That Vary by Model

	102
Hydraulic-Powered Pump (see page 3)	High-Flo Lower (see manual 311690)
247355	253035
24E786	24E785
247356	253063
247357	253086
247358	253396
247359	253522
247360	253525
247361	253570

TI10467a

# Dimensions



T18354a

## Air-Powered Pumps

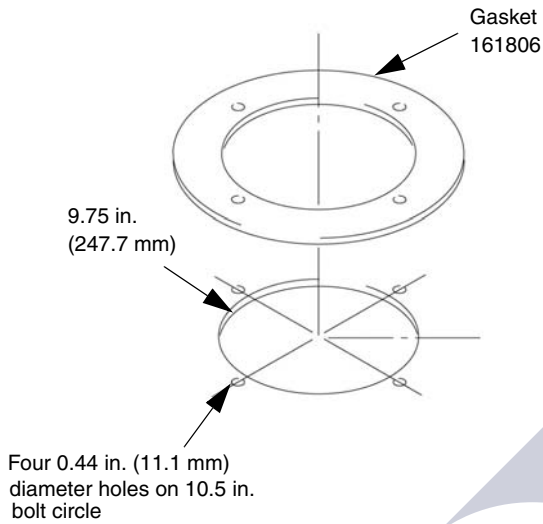
Pump Model	A in. (mm)	B in. (mm)	Approx. Weight lb (kg)
NXT cst	45.60 (1158)	28.78 (731)	96 (43)

## Hydraulic-Powered Pumps

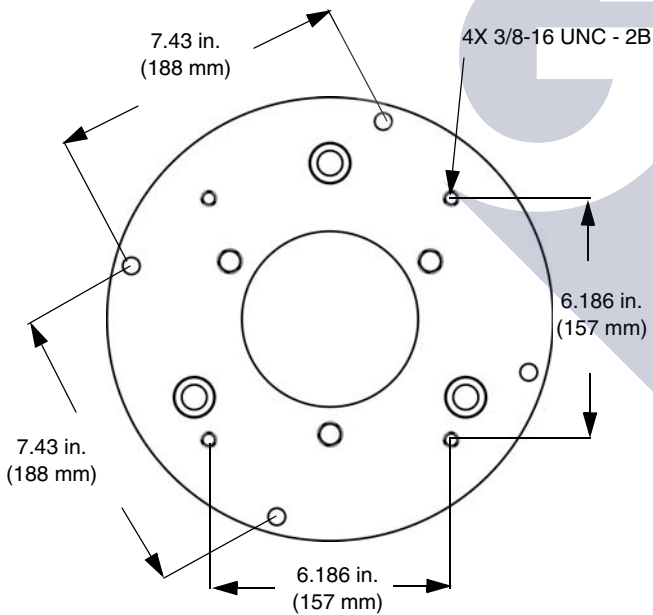
Pump Model	A in. (mm)	B in. (mm)	Approx. Weight lb (kg)
Viscount I Plus cst	49.00 (1245)	28.78 (731)	76 (35)
Viscount II	53.72 (1365)	28.78 (731)	144 (65)

# Pump Mounting Hole Diagram

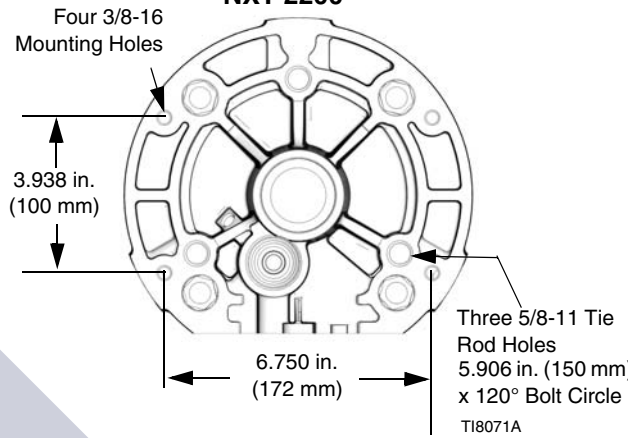
## Viscount I Plus Models



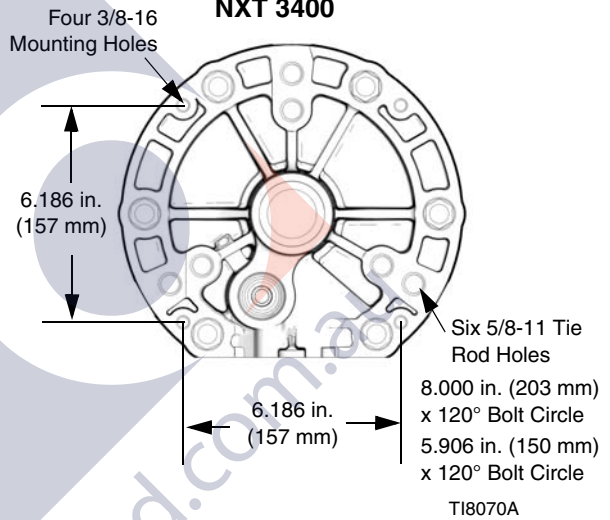
## Viscount II Models



## NXT 2200



## NXT 3400





# Technical Data

## NXT

Model	Maximum Working Pressure psi (MPa, bar)	Air Operating Range psi (MPa, bar)	Air Consumption	Fluid Flow at 60 cycles per minute gpm (lpm)	Pump Cycles per Gallon (Liter)	Maximum Fluid Temperature Rating °F (°C)
JX20XX	200 (1.4, 14)	100 (0.7, 7.0)	See Performance Chart	32 (121)	1.9 (0.5)	150° (66°)
JX30XX	300 (2.1, 21)			23 (88)	2.6 (0.7)	
JX35XX	350 (2.4, 24)			32 (121)	1.9 (0.5)	
JX40XX	400 (2.8, 28)			17 (64)	3.6 (0.9)	
JX45XX	450 (3.1, 31)			23 (88)	2.6 (0.7)	

See 311238 for Sound information.

## Viscount I Plus Pumps

Model	Maximum Working Pressure psi (MPa, bar)	Maximum Hydraulic Working Pressure psi (MPa, bar)	Hydraulic Oil Consumption	Maximum Hydraulic Motor Fluid Temperature	Fluid Flow at 60 cycles per minute gpm (lpm)	Pump Cycles per Gallon (Liter)	Maximum Fluid Temperature Rating
253642	300 (2.1, 21)	1500 (10.3, 103)	See Performance Chart	134°F (54°C)	14 (54)	4.2 (1.1)	150°F (66°C)
253643	225 (1.6, 16)				20 (74)	3.1 (0.8)	
24E787	300 (2.1, 21)				14 (54)	4.2 (1.1)	
24E788	225 (1.6, 16)				20 (74)	3.1 (0.8)	
253644	300 (2.1, 21)				14 (54)	4.2 (1.1)	
253645	225 (1.6, 16)				20 (74)	3.1 (0.8)	
253646	300 (2.1, 21)				14 (54)	4.2 (1.1)	
253647	225 (1.6, 16)				20 (74)	3.1 (0.8)	
253648	300 (2.1, 21)				14 (54)	4.2 (1.1)	
253649	225 (1.6, 16)				20 (74)	3.1 (0.8)	
253650	300 (2.1, 21)				14 (54)	4.2 (1.1)	
253651	225 (1.6, 16)				20 (74)	3.1 (0.8)	
253652	300 (2.1, 21)				14 (54)	4.2 (1.1)	
253653	225 (1.6, 16)				20 (74)	3.1 (0.8)	
253654	300 (2.1, 21)				14 (54)	4.2 (1.1)	
253655	225 (1.6, 16)				20 (74)	3.1 (0.8)	

## Viscount II Pumps

Model	Maximum Working Pressure psi (MPa, bar)	Maximum Hydraulic Working Pressure psi (MPa, bar)	Hydraulic Oil Consumption	Maximum Hydraulic Motor Fluid Temperature	Fluid Flow at 60 cycles per minute gpm (lpm)	Pump Cycles per Gallon (Liter)	Maximum Fluid Temperature Rating
247355	460 (3.2, 32)	1200 (8.3, 83)	See Performance Chart	134°F (54°C)	31.7 (120)	1.89 (0.50)	150°F (66°C)
24E786							
247356							
247357							
247358							
247359							
247360							
247361							

# Performance Charts

## Air-Powered Pumps

### Fluid Outlet Pressure - Black Curves

To find Fluid Outlet Pressure (psi/MPa/bar) at a specific fluid flow (gpm/lpm) and operating air pressure (psi/MPa/bar):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black).
3. Follow left to scale to read fluid outlet pressure.

**Key:**

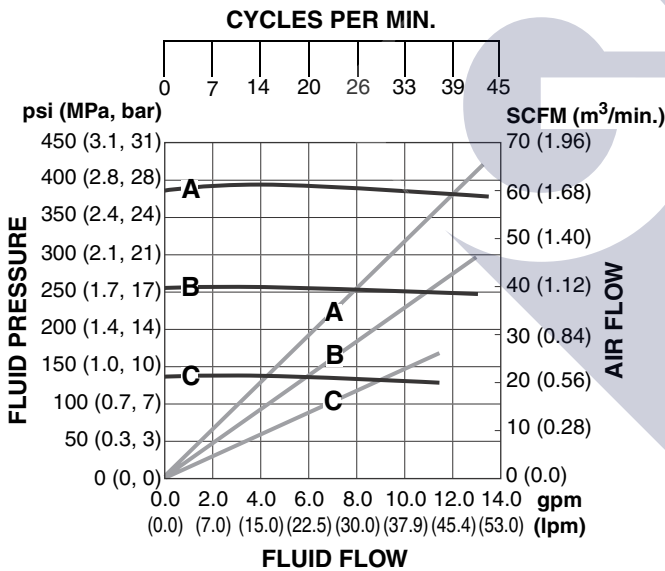
- A 100 psi (0.7 MPa, 7.0 bar) air pressure
- B 70 psi (0.49 MPa, 4.9 bar) air pressure
- C 40 psi (0.28 Mpa, 2.8 bar) air pressure

### Air Consumption - Gray Curves

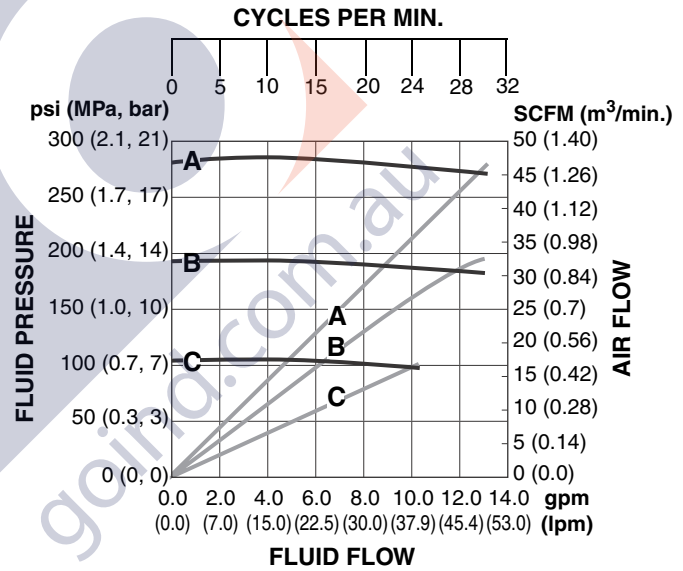
To find Pump Air Consumption (scfm or m<sup>3</sup>/min.) at a specific fluid flow (gpm/lpm) and air pressure (psi/MPa/bar):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve (dashes).
3. Follow left to scale to read air consumption.

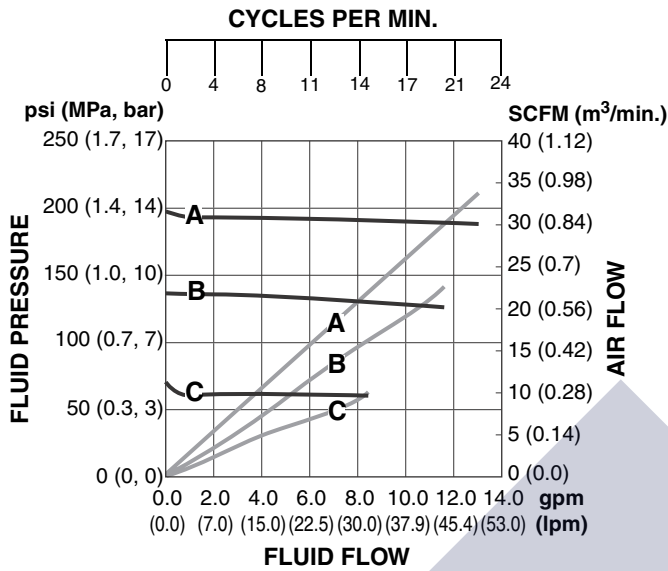
**2200cc NXT Air Motor, 1000cc High-Flo Lower**



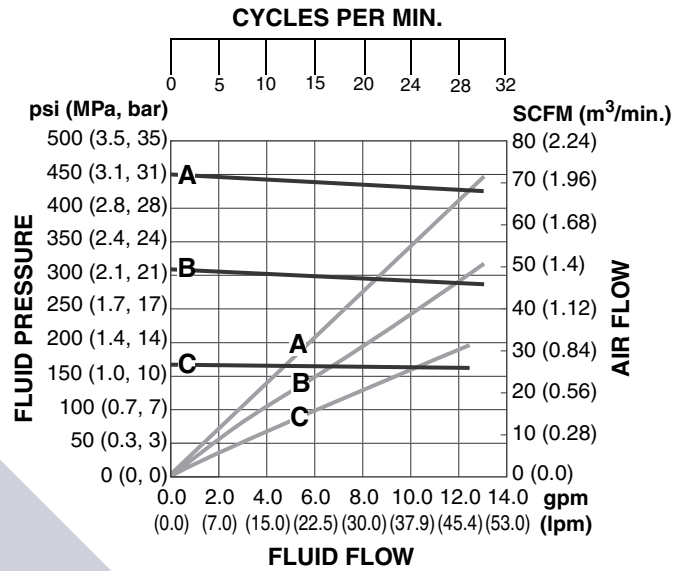
**2200cc NXT Air Motor, 1500cc High-Flo Lower**



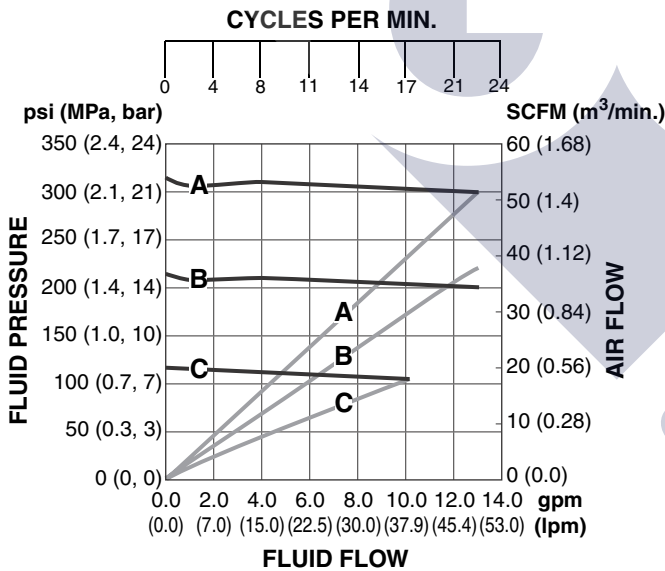
2200cc NXT Air Motor, 2000cc High-Flo Lower



3400cc NXT Air Motor, 1500cc High-Flo Lower

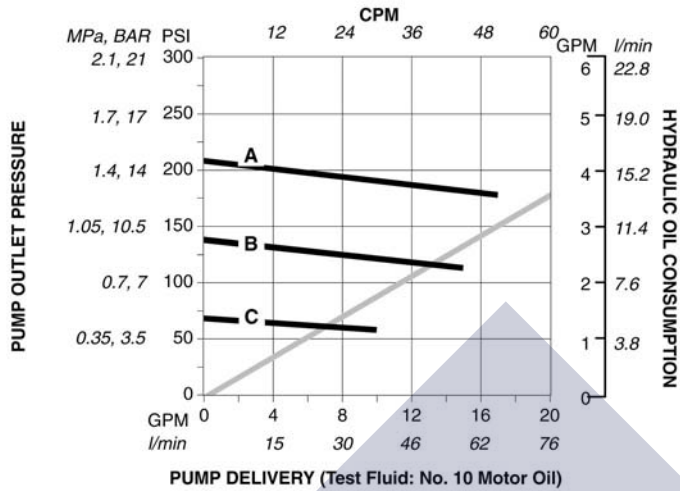


3400cc NXT Air Motor, 2000cc High-Flo Lower



# Hydraulic Powered Pumps

## Viscount I Plus 225 Pumps



- A** 10.3 MPa, 103 bar (1500 psi) hydraulic oil pressure
- B** 7.0 MPa, 70 bar (1000 psi) hydraulic oil pressure
- C** 3.4 MPa, 34 bar (500 psi) hydraulic oil pressure

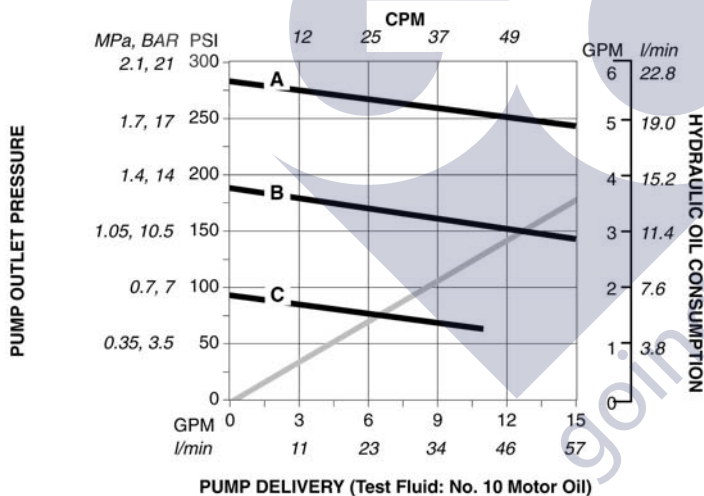
**To find Outlet Pressure (MPa/bar/psi) at a specific delivery (liter/min or gpm) and operating hydraulic pressure (MPa/bar/psi):**

1. Locate desired delivery along bottom of chart.
2. Read vertical line up to intersection with selected fluid outlet pressure curve (black curves). Curve slopes down from left to right. Follow left to scale and read outlet pressure.

**To find Motor Hydraulic Oil Consumption (liter/min or gpm) at a specific delivery (liter/min or gpm) :**

1. Locate desired delivery along bottom of chart.
2. Read vertical line up to intersection with hydraulic oil consumption curve (gray curve). Curve slopes up from left to right. Follow right to scale and read hydraulic oil consumption.

## Viscount I Plus 300 Pumps



- A** 10.3 MPa, 103 bar (1500 psi) hydraulic oil pressure
- B** 7.0 MPa, 70 bar (1000 psi) hydraulic oil pressure
- C** 3.4 MPa, 34 bar (500 psi) hydraulic oil pressure

**To find Outlet Pressure (MPa/bar/psi) at a specific delivery (liter/min or gpm) and operating hydraulic pressure (MPa/bar/psi):**

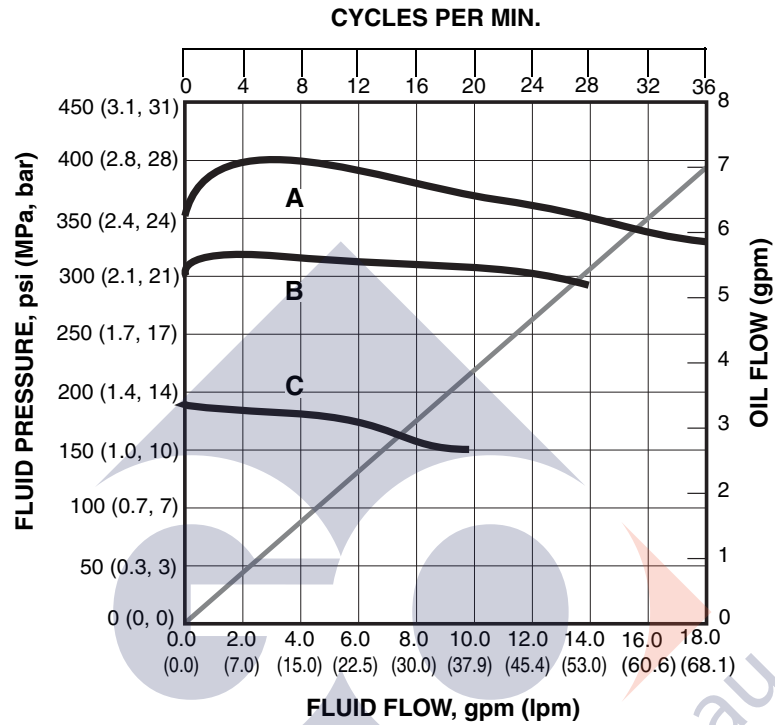
1. Locate desired delivery along bottom of chart.
2. Read vertical line up to intersection with selected fluid outlet pressure curve (black curves). Curve slopes down from left to right. Follow left to scale and read outlet pressure.

**To find Motor Hydraulic Oil Consumption (liter/min or gpm) at a specific delivery (liter/min or gpm) :**

1. Locate desired delivery along bottom of chart.
2. Read vertical line up to intersection with hydraulic oil consumption curve (gray curve). Curve slopes up from left to right. Follow right to scale and read hydraulic oil consumption.

# Viscount II 460 Pumps

**Viscount II 460 - MR4Ball - 2000cc  
Performance @ 600 1050 1200 PSIG**



- Key:**  
 A High PSIG  
 B Mid PSIG  
 C Low PSIG

# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco 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 Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco 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-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco 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, labor, 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.**

Graco'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 two (2) years of the date of sale.

**GRACO 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 GRACO.** These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco 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 Graco, or otherwise.

## **FOR GRACO CANADA CUSTOMERS**

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## Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

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

Original instructions. *This manual contains English.* MM 311211

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