Instructions - Parts List

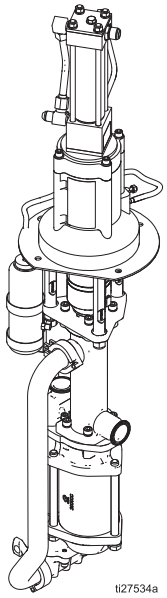
Viscount® 4-Ball Pumps

3A3381F
EN

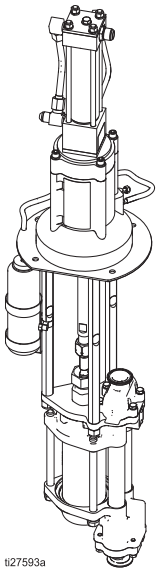
Hydraulic-powered pumps for low pressure, high volume circulation of finishing materials. Do not use for flushing or purging lines with caustics, acids, abrasive line strippers, and other similar fluids. For professional use only.

Important Safety Instructions
Read all warnings and instructions in this manual. Save these instructions.

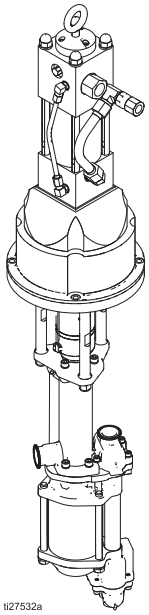
See page 3 for model information, including maximum working pressure.



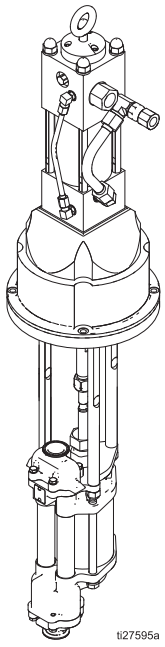
Viscount I Pump with 2000cc 4-Ball Lower, Sealed



Viscount I Pump with 1000cc 4-Ball Lower, Open Wet Cup



Viscount II Pump with 2000cc 4-Ball Lower, Sealed



Viscount II Pump with 2000cc 4-Ball Lower, Open Wet Cup

CE Ex II 2 G Ex h IIB T3 Gb

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Contents

Related Manuals

Part No.	Description
308330	Viscount I Plus Hydraulic Motor manual
308048	Viscount II Hydraulic Motor manual
333022	Repair/Parts Manual, Sealed 4-Ball Lowers
3A3452	Repair/Parts Manual, 4-Ball Lowers with Open Wet Cup

Models

Model No.	Motor	Lower Size	Lower type	Maximum Pump Working Pressure psi (MPa, bar)	Connection Fittings Style	Lower Material	Rod Coating	Cylinder Coating
17K963	VISCOUNT 1	750cc	Sealed	460 (3.2, 32.0)	tri-clamp	SST	Ultralife™	Ultralife™
17K964	VISCOUNT 1	750cc	Open	460 (3.2, 32.0)	npt	SST	Ultralife™	Ultralife™
17K965	VISCOUNT 1	750cc	Open	460 (3.2, 32.0)	tri-clamp	SST	Ultralife™	Ultralife™
17E238	VISCOUNT 1	1000cc	Open	300 (2.1, 21.0)	npt	CS	Chrome	Chrome
17E239	VISCOUNT 1	1000cc	Sealed	300 (2.1, 21.0)	tri-clamp	SST	Ultralife™	Ultralife™
17E240	VISCOUNT 1	1000cc	Open	300 (2.1, 21.0)	npt	SST	Ultralife™	Ultralife™
17E241	VISCOUNT 1	1000cc	Open	300 (2.1, 21.0)	tri-clamp	SST	Ultralife™	Ultralife™
17E234	VISCOUNT 1	1500cc	Open	225 (1.6, 16.0)	npt	CS	Chrome	Chrome
17E235	VISCOUNT 1	1500cc	Sealed	225 (1.6, 16.0)	tri-clamp	SST	Ultralife™	Ultralife™
17E236	VISCOUNT 1	1500cc	Open	225 (1.6, 16.0)	npt	SST	Ultralife™	Ultralife™
17E237	VISCOUNT 1	1500cc	Open	225 (1.6, 16.0)	tri-clamp	SST	Ultralife™	Ultralife™
17E230	VISCOUNT 1	2000cc	Open	167 (1.2, 12.0)	npt	CS	Chrome	Chrome
17E231	VISCOUNT 1	2000cc	Sealed	167 (1.2, 12.0)	tri-clamp	SST	Ultralife™	Ultralife™
17E232	VISCOUNT 1	2000cc	Open	167 (1.2, 12.0)	npt	SST	Ultralife™	Ultralife™
17E233	VISCOUNT 1	2000cc	Open	167 (1.2, 12.0)	tri-clamp	SST	Ultralife™	Ultralife™
17E242	VISCOUNT 2	2000cc	Open	460 (3.2, 32.0)	npt	CS	Chrome	Chrome
17E243	VISCOUNT 2	2000cc	Sealed	460 (3.2, 32.0)	tri-clamp	SST	Ultralife™	Ultralife™
17E244	VISCOUNT 2	2000cc	Open	460 (3.2, 32.0)	npt	SST	Ultralife™	Ultralife™
17E245	VISCOUNT 2	2000cc	Open	460 (3.2, 32.0)	tri-clamp	SST	Ultralife™	Ultralife™

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 symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠WARNING




FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock**.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.


PRESSURIZED EQUIPMENT HAZARD

Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow the **Pressure Relief Procedure** when you stop spraying/dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.

⚠WARNING


EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheet (SDS) from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.


MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read Safety Data Sheet (SDS) to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Installation

Grounding

The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

Pump: use a ground wire and clamp. See FIG. 1 Loosen the locknut (W) of the grounding lug (Z). Insert one end of the wire (Y) in the ground lug and tighten the locknut securely. Connect the ground clamp to a true earth ground. Order Part No. 237569, Ground Wire and Clamp.

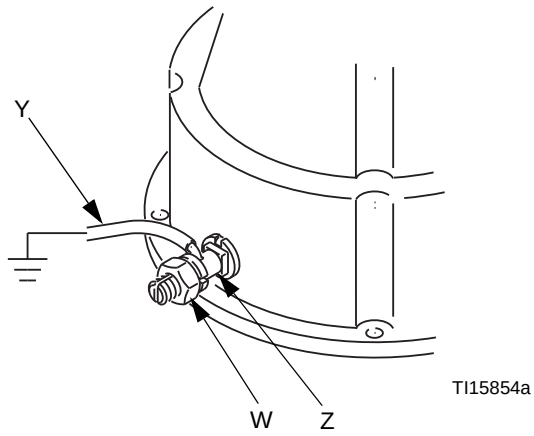


FIG. 1 Ground Wire

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 25 megohms, replace hose immediately.

Hydraulic power supply: follow manufacturer's recommendations.

Surge tank: use a ground wire and clamp.

Dispense valve: 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 non-conductive 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 or valve firmly to the side of a grounded metal pail, then trigger the gun or open the valve.

Mounting

Stand Mount

Mount the pump in the accessory pump stand (B). Use Part No. 253692 Stand for the Viscount 1 Pumps (see FIG. 2) and Part No. 218742 Stand for Viscount 2 Pumps (see FIG. 3).

See **Mounting Stand Hole Layouts** on page 22. Secure the stand to the floor with M19 (5/8 in.) bolts which engage at least 152 mm (6 in.) into the concrete floor to prevent the pump from tipping.

Wall Mount

1. Ensure the wall is strong enough to support the weight of the pump assembly and accessories, fluid, hoses, and stress caused during pump operation.
2. Ensure that the mounting location has sufficient clearance for easy operator access.
3. Position the wall bracket at a convenient height, ensuring that there is sufficient clearance for fluid connections and for servicing the lower.
4. Drill four 7/16 in. (11 mm) holes using the bracket as a template. Use any of the three mounting hole groupings in the bracket. See **255143 Wall Mount Bracket**, page 23.
5. Bolt the bracket securely to the wall using bolts and washers designed to hold in the wall's construction.
6. Attach the pump assembly to the mounting bracket.
7. Connect air and fluid hoses.

Plumbing

Install a fluid shutoff valve (D) between the mix tank (A) and the pump.

When using a stainless steel pump, use stainless steel plumbing to maintain a corrosion-resistant system.

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 12.

Accessories

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

Hydraulic Power Supply

NOTICE

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. (20mm), 37° flare. Use a minimum 1/2 in. (13 mm) ID hydraulic supply line (L).
- For Viscount II motors, use a minimum 1/2 in. (13 mm) ID supply line (L). The motor has a 3/4in. 3/4 in. (20mm) npt(f) hydraulic oil supply fitting.
- **Supply line shutoff valve (S):** isolates the motor when servicing the system.
- **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.(22 mm), 37° flare. Use a minimum 5/8 in. (16 mm) ID hydraulic return line (K).
- For Viscount II motors, use a minimum 7/8 in. (22 mm) ID return line (K). The motor has a 1 in. npt (f) hydraulic oil return fitting.
- **Return line shutoff valve (R):** isolates the motor when servicing the system.

NOTICE

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).

Fluid Line

For typical installation, see FIG. 2.

- **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.

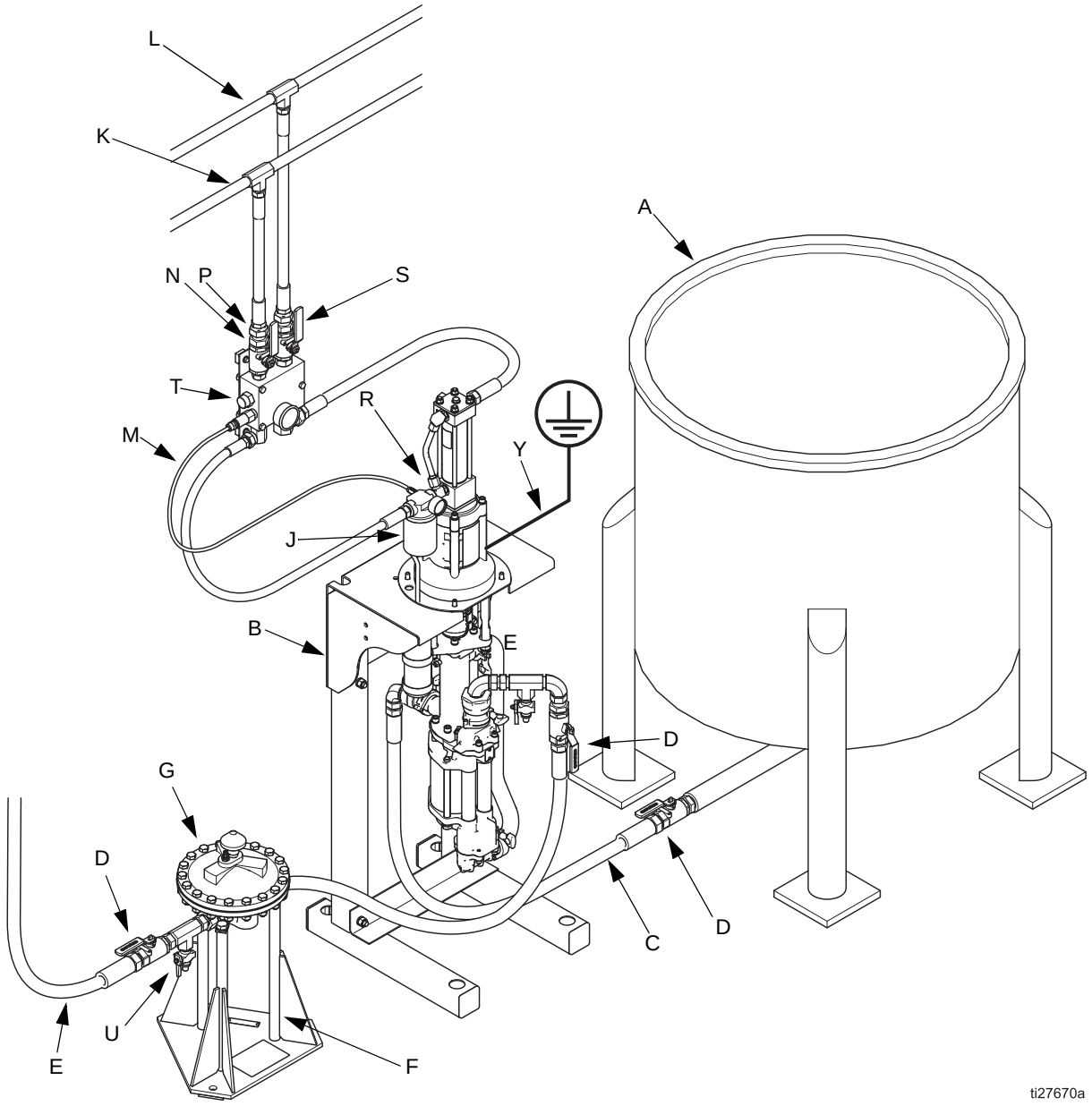


FIG. 2. Typical Installation for Viscount I.

Key:

A Mix Tank
B 253692 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
J 10 Micron Return Filter
K Hydraulic Return Line
L Hydraulic Supply Line
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
U Fluid Drain Valve (required)
Y Ground Wire (required see page 6 for installation)

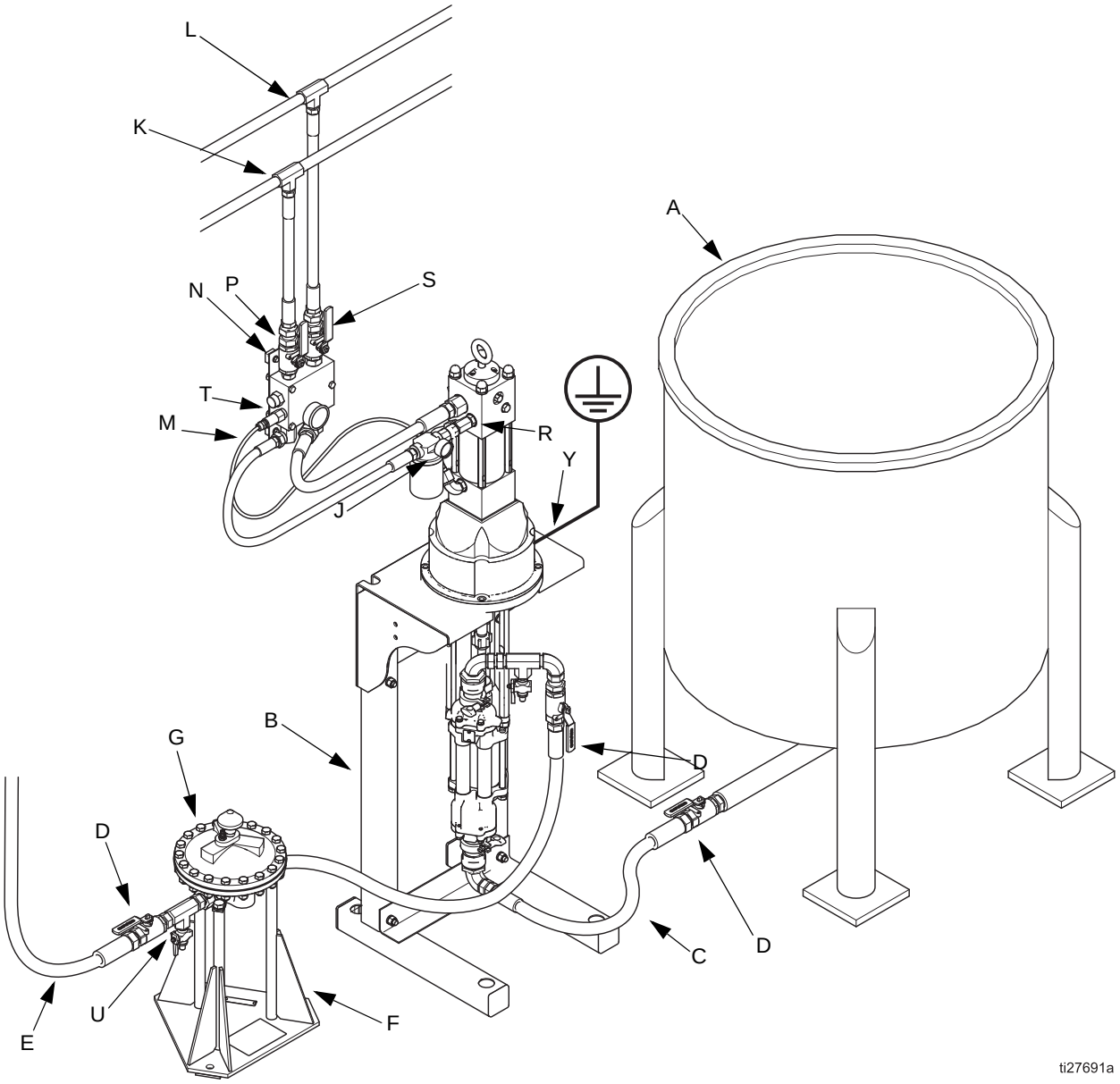


FIG. 3. Typical Installation for Viscount II.

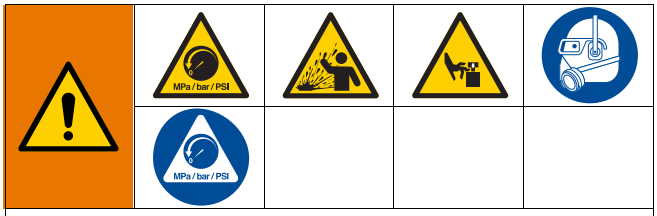
Key:

A Mix Tank
B 218742 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
J 10 Micron Return Filter
K Hydraulic Return Line
L Hydraulic Supply Line
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
U Fluid Drain Valve (required)
Y Ground Wire (required see page 6 for installation)

Operation

Pressure Relief Procedure

Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Shut off the hydraulic supply line valve (S) first, then the return line valve (R).
2. Open the dispensing valve, if used.
3. Open all fluid drain valves (U) in the system, having a waste container ready to catch drainage. Leave drain valve(s) open until you are ready to pump again.

NOTICE

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 over pressurizing the motor or its seals. When starting the hydraulic system, open the return line shutoff valve first.

Prime the Pump

1. Fill the wet cup with Throat Seal Liquid (TSL).

NOTE: Sealed 4 ball lowers with bellows do not require TSL.

2. Close the flow control valve (T) by turning knob counterclockwise reducing pressure to zero. Close the supply line shutoff valve (S) and the return line shutoff valve (R). Also verify that all drain valves (U) are closed.
3. Check that all fittings throughout system are tightened securely.
4. Start the hydraulic power supply.
5. Open the return line shutoff valve (R), then the supply line shutoff valve (S). Slowly turn the flow control valve (T) clockwise, increasing pressure until pump starts.
6. Cycle pump slowly until all air is pushed out and pump and hoses are fully primed.
7. Close the fluid shutoff valve (D) downstream of the pump. The pump should stall against pressure.

NOTE: In a circulation system, the pump operates continuously until the power supply is shut off. In a direct-supply system, the pump starts when the dispense valve is opened, and stops when the dispense valve is closed.

Stop Pump at Bottom of Stroke

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

NOTICE

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

Shutdown

Follow the **Pressure Relief Procedure**, page 11.

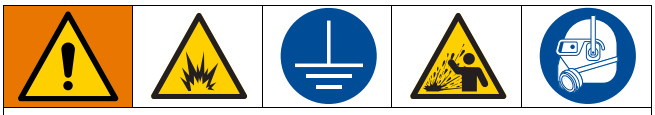
Always flush the pump before the fluid dries on the displacement rod. See **Flushing** on page 12.

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.

Flushing



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

- Flush before changing colors, before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.
- Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.

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.

Hydraulic Power Supply Check

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

Stall Test

Perform a stall test periodically to ensure the piston seal is in good working condition and prevent system pressurization:

Close the fluid shutoff valve (D) closest to the pump on the down stroke 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.

NOTICE

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

Stop the pump on the down stroke, before the air motor changes over.

NOTICE

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

Changing the TSL On Wet Cup Models

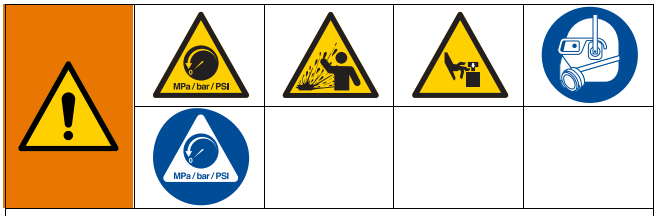
On Wet Cup Models check the condition of the TSL and the level in the reservoir every week, minimum. TSL should be changed at least every month.

Troubleshooting

Problem	Cause	Solution
Pump output low on both strokes.	Restricted hydraulic supply lines.	Clear any obstructions; be sure all shutoff valves are open; increase pressure, but do not exceed maximum working pressure.
	Exhausted fluid supply.	Refill and re-prime pump.
	Clogged fluid outlet line, valves, etc.	Clear.
	Worn piston packing.	Replace. See lower manual.
Pump output low on only one stroke.	Held open or worn ball check valves.	Check and repair.
	Worn piston packings.	Replace. See lower manual.
No output.	Improperly installed ball check valves.	Check and repair.
Pump operates erratically.	Exhausted fluid supply.	Refill and re-prime pump.
	Held open or worn ball check valves.	Check and repair.
	Worn piston packing.	Replace. See lower manual.
	Excessive hydraulic fluid supply pressure to motor.	See motor manual.
Pump will not operate.	Restricted 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 re-prime pump.
	Clogged fluid outlet line, valves, etc.	Clear.
	Damaged hydraulic motor.	See motor manual.
	Fluid dried on piston rod.	Disassemble and clean pump. See lower manual. In future, stop pump at bottom of stroke.

Repair

Disassembly



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Follow the **Pressure Relief Procedure**, page 11.
2. Disconnect the hoses from the lower and plug the ends to prevent fluid contamination.
3. **Models with Sealed Lowers:** Remove the 2-piece shield (9) by inserting a screwdriver straight into the slot, and using it as a lever to release the tab. Repeat for all tabs. **Do not** use the screwdriver to pry the shields apart. See FIG. 4.
4. Remove the hose clamp holding the drain bottle to the tie rod (3). Loosen the coupling nut (5) and remove the collars (6). Remove the coupling nut from the piston rod (R). Unscrew the lock nuts (4) from the tie rods (3). Separate the motor (1) and lower (2). See FIG. 6.
5. To repair the air motor or lower, see the separate manuals listed under **Related Manuals** on page 2.

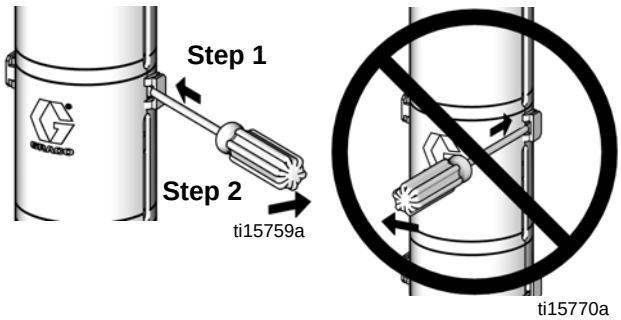


FIG. 4. Shield Disassembly

Reassembly

1. If the coupling adapter (8) and tie rods (3) have not been disassembled from the motor (1), skip to step 2.

   If the coupling adapter (8) and tie rods (3) have been disassembled from the motor (1), follow these steps:

   a. Loosen, but do not remove, the screws holding the mounting plate (12) to the motor (1).

   b. Install the tie rods (3) as follows:
      - Viscount I Pumps: Screw the tie rods (3) through the mounting plate (12) and into the threaded holes in the base of the motor (1). Torque to 50-55 ft-lb (68-75 N•m).
      - Viscount II Pumps: Screw the tie rods (3) into the mounting plate (12) and torque to 50-55 ft-lb (68-75 N•m).

   c. Install o-ring (15) into o-ring groove on coupling adapter.

   d. Fill the cavity in the bottom of the motor shaft with grease.

   e. Lubricate the threads of the coupling adapter (8). Install the coupling adapter as follows:
      - Viscount I Plus motors: Screw the coupling adapter (8) into the motor shaft until the pin holes align. Install the pin (7) in the first hole from the end of the coupling.
      - Viscount II motors: Slide the adapter nut (7) onto the coupling adapter (8). Screw the adapter nut (7) onto the motor shaft (S) and torque to 75-80 ft-lb (102-109 N•m).

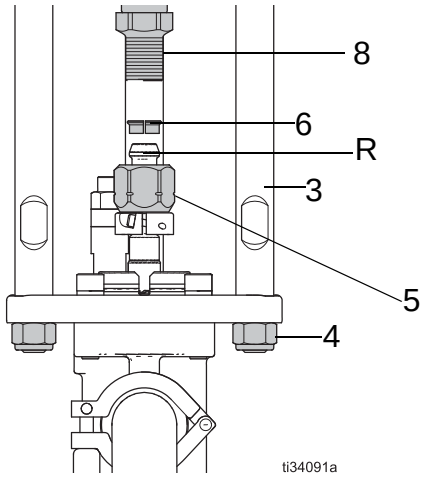
   f. Continue to step 2.

2. Assemble the coupling nut (5) over the piston rod (R).

3. Orient the lower (2) to the motor (1). Position the lower on the tie rods (3).

4. If you are reusing lock nuts (4) and the nylon of the lock nut is worn or cut, add blue thread locker to the tie rod threads.

5. Screw the lock nuts (4) onto the tie rods. Leave the lock nuts (4) loose enough to allow the lower to move so that it can be aligned correctly.



6. Tighten the mounting plate screws.
   - Viscount I Plus motors: Torque the screws (13) to 15-17 ft-lb (20-23 N•m)
   - Viscount II motors: Torque the screws (13) to to 50-55 ft-lb (68-75 N•m).

7. Insert the collars (6) into the coupling nut (5). Tighten the coupling nut onto the coupling adapter (8). Torque to 90-100 ft-lb (122-135 N•m) to allow the pump rod to align the lower on the tie rods.

8. Tighten the lock nuts and torque to 50-60 ft-lb (68-81 N•m).

9. **Models with Sealed Lowers:** Install the shields (9) by engaging the bottom lips with the groove in the top plate. Snap the two shields together.

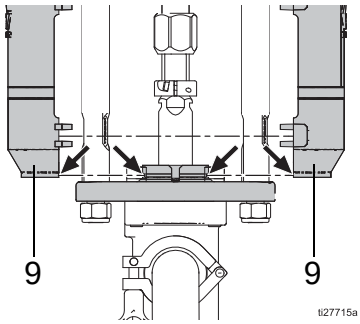
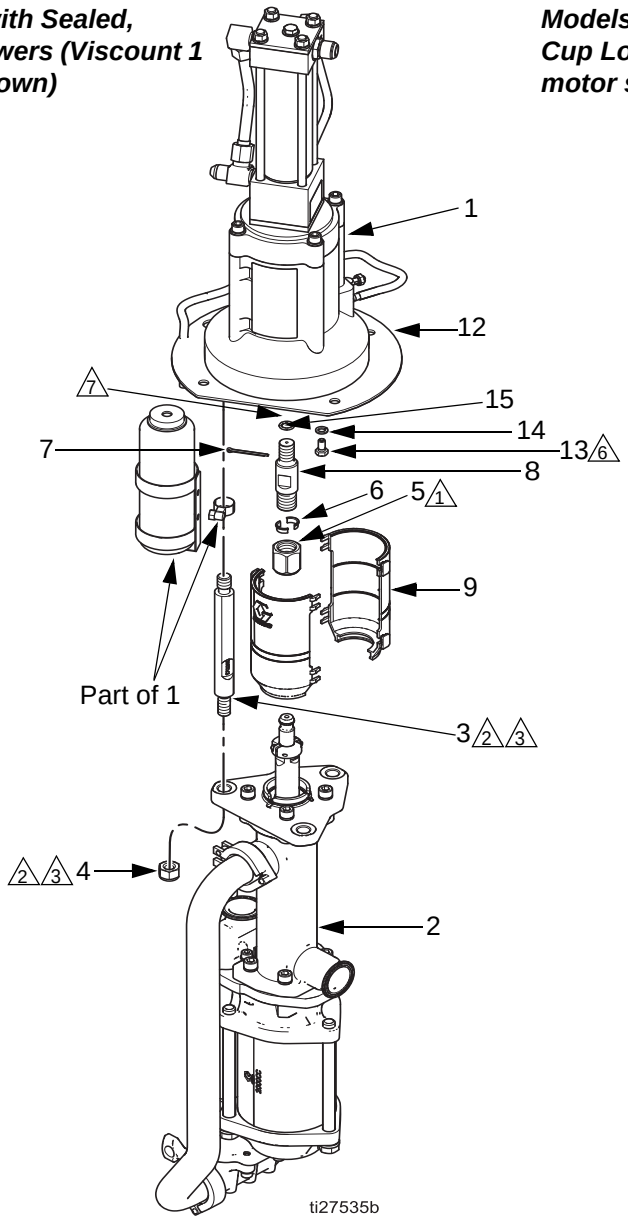


FIG. 5. Shield Reassembly

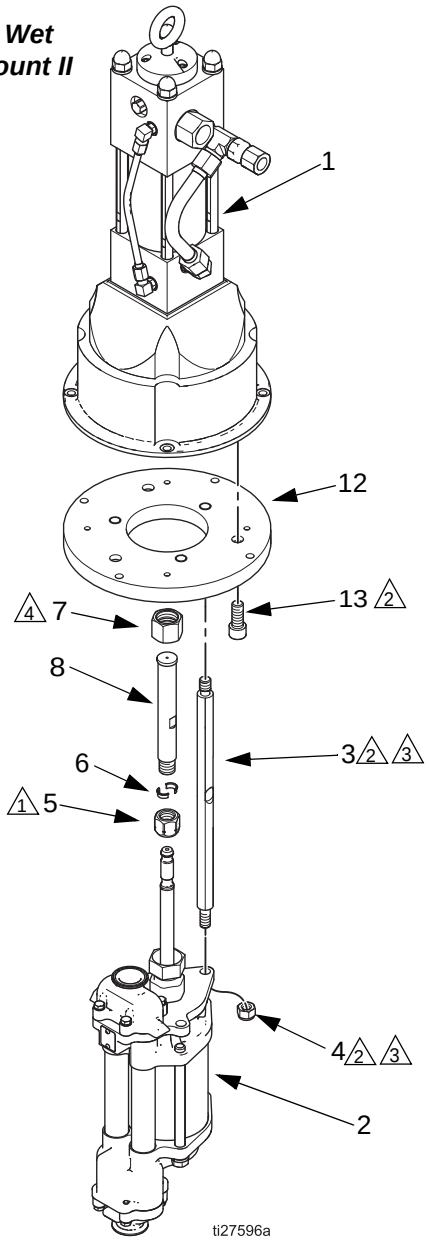
10. Flush and test the pump before reinstalling it in the system. Connect hoses and flush the pump. While it is pressurized, check for smooth operation and leaks. Adjust or repair as necessary before reinstalling in the system.

11. Reconnect the pump ground wire before operating.

Models with Sealed, 4-Ball Lowers (Viscount 1 motor shown)



Models with Open Wet Cup Lowers (Viscount II motor shown)



1 Torque to 90-100 ft-lb (122-135 N•m).

2 Torque to 50-55 ft-lb (68-75 N•m).

3 Lubricate threads.

4 Torque to 75-80 ft-lb (102-109 N•m).

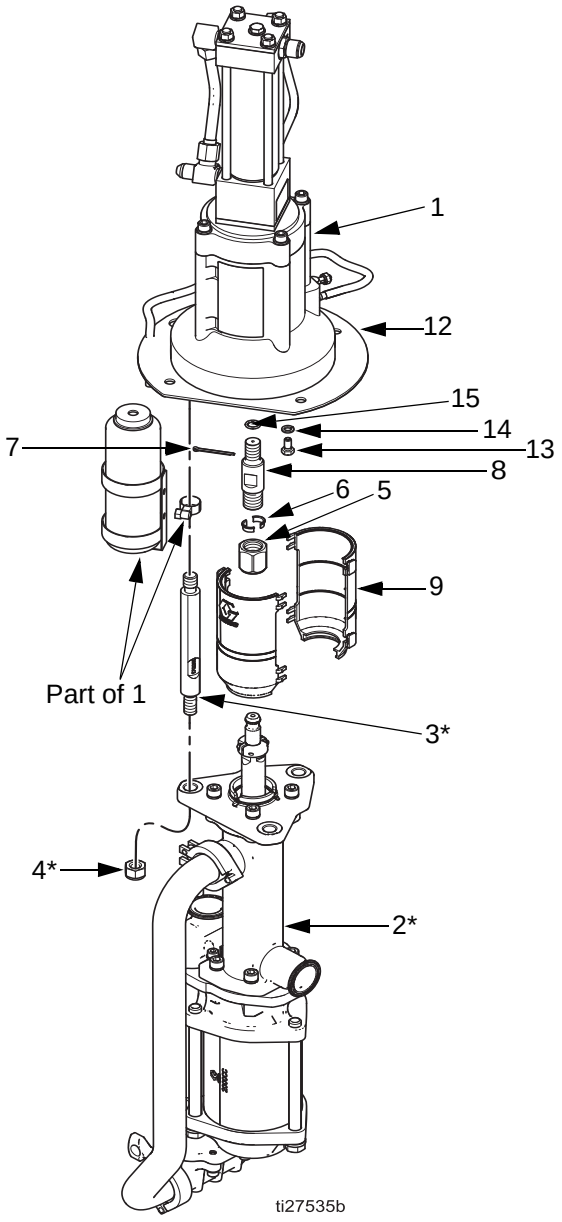
6 Torque to 15-17 ft-lb (20-23 N•m).

7 Fill cavity with grease.

FIG. 6. Disconnect or Reconnect the Motor and Lower

Parts

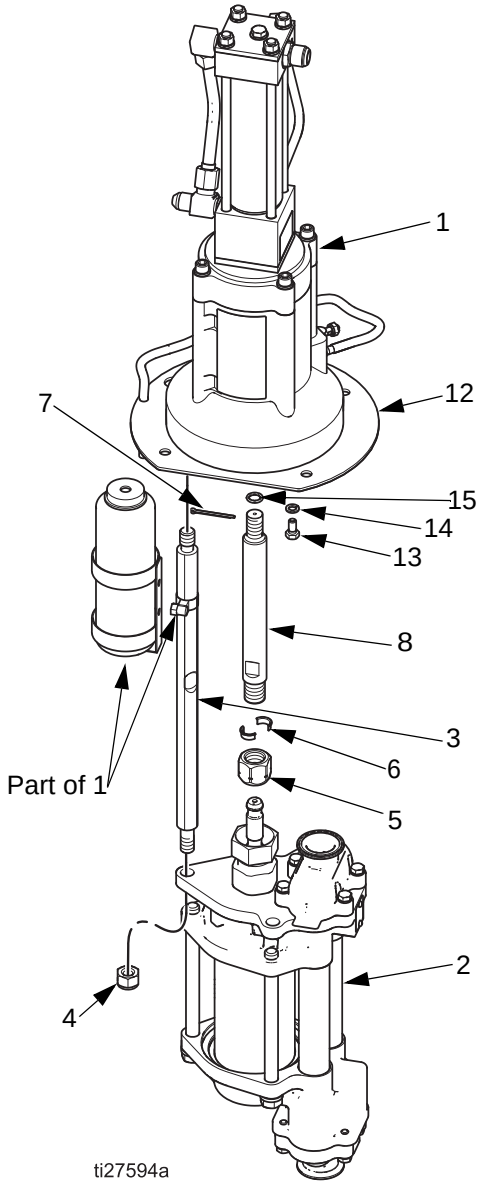
Viscount I Pumps:
Models 17K963, 17E231, 17E235, and 17E239
750cc, 1000cc, 1500cc, or 2000cc with Sealed 4-Ball Lower



Parts List

Ref. No.	Part No.	Description	Qty.
1	261466	MOTOR, Viscount I, see detailed parts list in manual 308330	1
2		LOWER, Sealed 4-Ball, see detailed parts list in manual 333022	1
	17K656	For model 17K963	
	17K659	For model 17E231	
	17K658	For model 17E235	
	17K657	For model 17E239	
3	17C261	TIE ROD, 8.49 in (215.6 mm) L; 6.2 in (157.7 mm) between shoulders	3
4	108683	NUT, lock, hex	3
5	17F000	NUT, coupling	1
6	184128	COLLAR, coupling	2
7	100103	PIN, cotter	1
8	17E258	ADAPTER, coupling, M22 x 1.5	1
9	24A640	SHIELD KIT, coupler; includes 2 shields	1
12	16E086	PLATE, mounting	1
13	100001	SCREW, cap, hex head	1
14	100214	WASHER	1
15	156082	PACKING, o-ring, 112	1

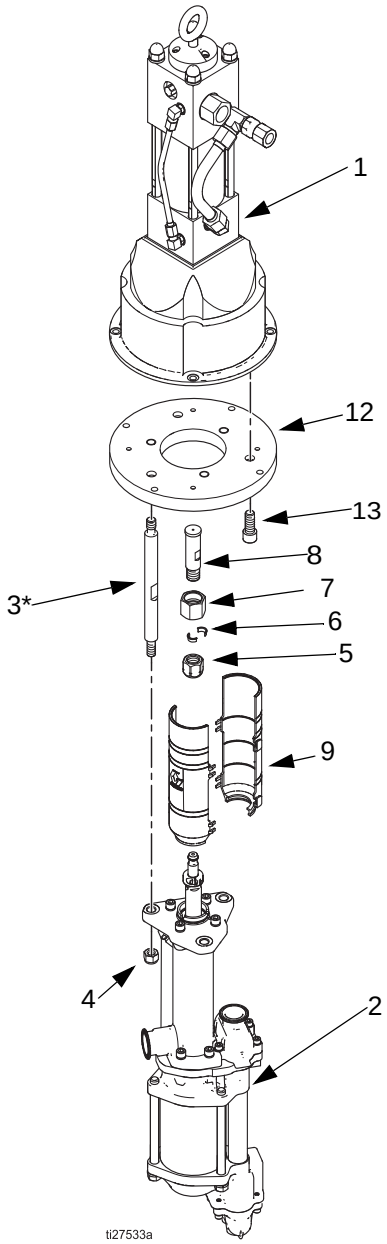
Viscount I Pumps:
Models 17K964, 17K965, 17E230, 17E232, 17E233, 17E234, 17E236, 17E237, 17E238, 17E240, and 17E241
750cc, 1000cc 1500cc or 2000cc with 4-Ball Lower, Open Wet Cup



Parts List

Ref. No.	Part No.	Description	Qty.
1	261466	MOTOR, Viscount I, see manual 308330	1
2		LOWER, 4-Ball, see manual 3A3452	1
	17K668	For model 17K964	
	17K664	For model 17K965	
	17K663	For model 17E230	
	17K671	For model 17E232	
	17K667	For model 17E233	
	17K662	For model 17E234	
	17K670	For model 17E236	
	17K666	For model 17E237	
	17K661	For model 17E238	
	17K669	For model 17E240	
	17K665	For model 17E241	
3	15G924	TIE ROD, 16.55 in (420.4 mm); 14.25 in (362 mm) between shoulders	3
4	108683	NUT, lock, hex	3
5	17F000	NUT, coupling	1
6	184128	COLLAR, coupling	2
7	100103	PIN, cotter	1
8	16C373	ADAPTER, coupling, M22 x 1.5	1
12	16E086	PLATE, mounting	1
13	100001	SCREW, cap, hex head	1
14	100214	WASHER	1
15	156082	PACKING, o-ring, 112	1

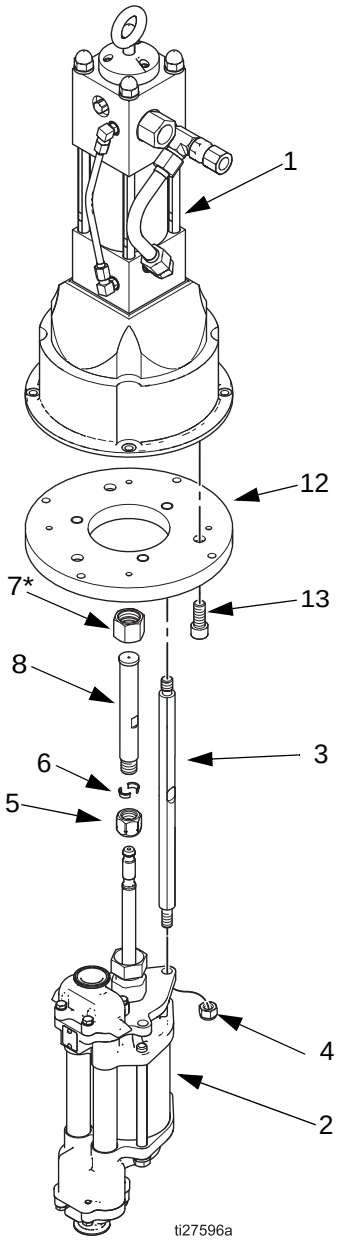
Viscount 2 Pump:
Model 17E243; 2000cc with Sealed 4-Ball Lower



Parts List

Ref. No.	Part No.	Description	Qty.
1	223646	MOTOR, Viscount 2, see detailed parts list in manual 308048	1
2	17K659	LOWER, 4-Ball, see detailed parts list in manual 333022	1
3	16H434	TIE ROD, 10.80 in. (274.3 mm); 8.37 in (212.6 mm) between shoulders	3
4	108683	NUT, lock, hex	3
5	17F000	NUT, coupling	1
6	184128	COLLAR, coupling	2
7	183079	NUT, adapter	1
8	17E257	ADAPTER, coupling,	1
9	24F251	SHIELD KIT, coupler; includes 2 shields	1
12	120558	PLATE, mounting	1
13	C19789	SCREW, cap, hex head	1

Viscount 2 Pumps:
Models 17E242, 17E244, and 17E245
2000cc with 4-Ball Lower, Open Wet Cup

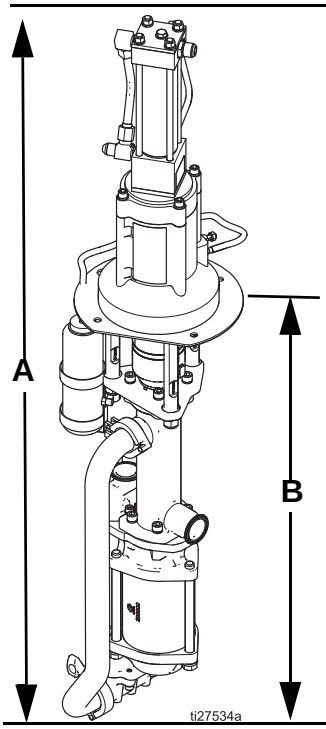


Parts

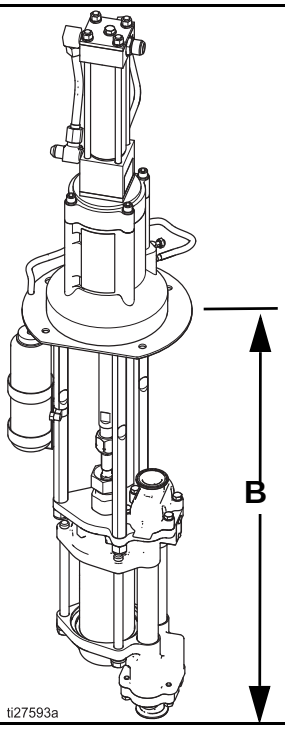
Ref. No.	Part No.	Description	Qty.
1	223646	MOTOR, Viscount 2, see detailed parts list in manual 308048	1
2		LOWER, 4-Ball, see detailed parts list in manual 3A3452	1
	17K662	For model 17E234	
	17K670	For model 17E236	
	17K666	For model 17E237	
	17K663	For model 17E242	
	17K671	For model 17E244	
	17K667	For model 17E245	
3	15G924	TIE ROD, 16.55 in (420.4 mm); 14.25 in (362 mm) between shoulders	3
4	108683	NUT, lock, hex	3
5	17F000	NUT, coupling	1
6	184128	COLLAR, coupling	2
7	183079	NUT, adapter	1
8	16C373	ADAPTER,	1
12	120558	PLATE, mounting	1
13	C19789	SCREW, cap, hex head	1

Dimensions

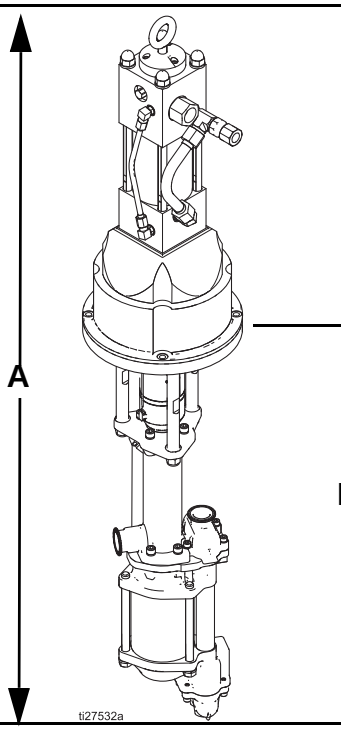
Viscount I Pump with Sealed 4-Ball Lower



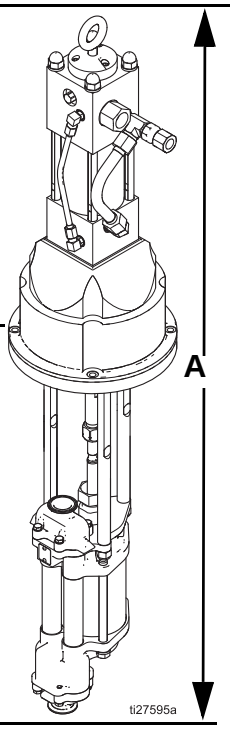
Viscount I Pump with Open Wet Cup Lower



Viscount II Pump with Sealed 4-Ball Lower



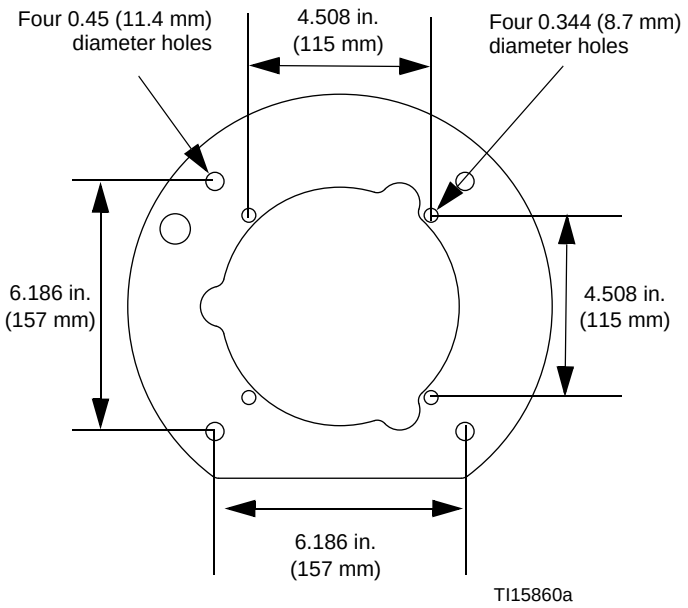
Viscount II Pump with Open Wet Cup Lower



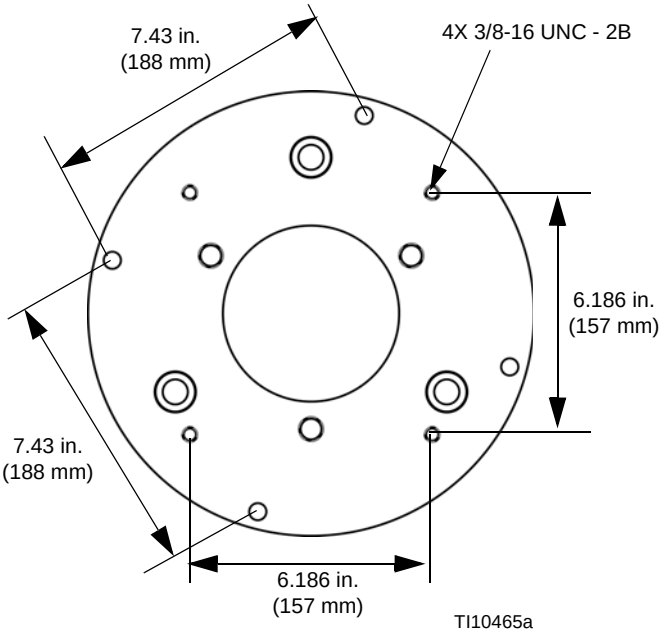
Model	Motor	Lower Size	Lower Type	A		B		Approx. Weight	
				in.	mm	in.	mm	lb.	kg.
17E230	VISCOUNT 1	2000cc	Open	49.0	1244	28.3	719	77	35
17E231	VISCOUNT 1	2000cc	Sealed	51.9	1319	31.2	793	105	48
17E232	VISCOUNT 1	2000cc	Open	49.0	1244	28.3	719	77	35
17E233	VISCOUNT 1	2000cc	Open	49.0	1244	28.3	719	77	35
17E234	VISCOUNT 1	1500cc	Open	49.0	1244	28.3	719	76	34
17E235	VISCOUNT 1	1500cc	Sealed	51.9	1319	31.2	793	104	47
17E236	VISCOUNT 1	1500cc	Open	49.0	1244	28.3	719	76	34
17E237	VISCOUNT 1	1500cc	Open	49.0	1244	28.3	719	76	34
17E238	VISCOUNT 1	1000cc	Open	49.0	1244	28.3	719	75	34
17E239	VISCOUNT 1	1000cc	Sealed	51.9	1319	31.2	793	103	47
17E240	VISCOUNT 1	1000cc	Open	49.0	1244	28.3	719	75	34
17E241	VISCOUNT 1	1000cc	Open	49.0	1244	28.3	719	75	34
17K963	VISCOUNT 1	750cc	Sealed	51.9	1319	31.2	793	102	46
17K964	VISCOUNT 1	750cc	Open	49.0	1244	28.3	719	74	34
17K965	VISCOUNT 1	750cc	Open	49.0	1244	28.3	719	74	34
17E242	VISCOUNT 2	2000cc	Open	55.4	1407	28.4	721	150	68
17E243	VISCOUNT 2	2000cc	Sealed	60.5	1537	33.4	849	173	78
17E244	VISCOUNT 2	2000cc	Open	55.4	1407	28.4	721	150	68
17E245	VISCOUNT 2	2000cc	Open	55.4	1407	28.4	721	150	68

Motor Mounting Hole Diagrams

Viscount I Plus Adapter Plate 16E086

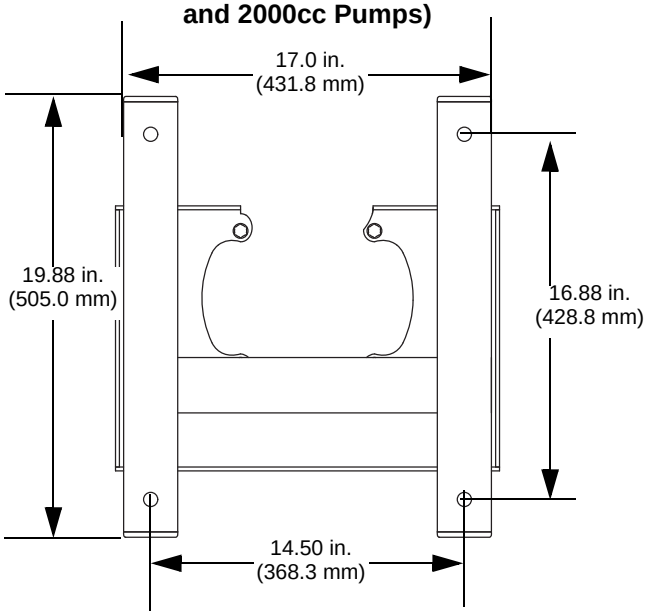


Viscount II Motor Mounting Hole Layout

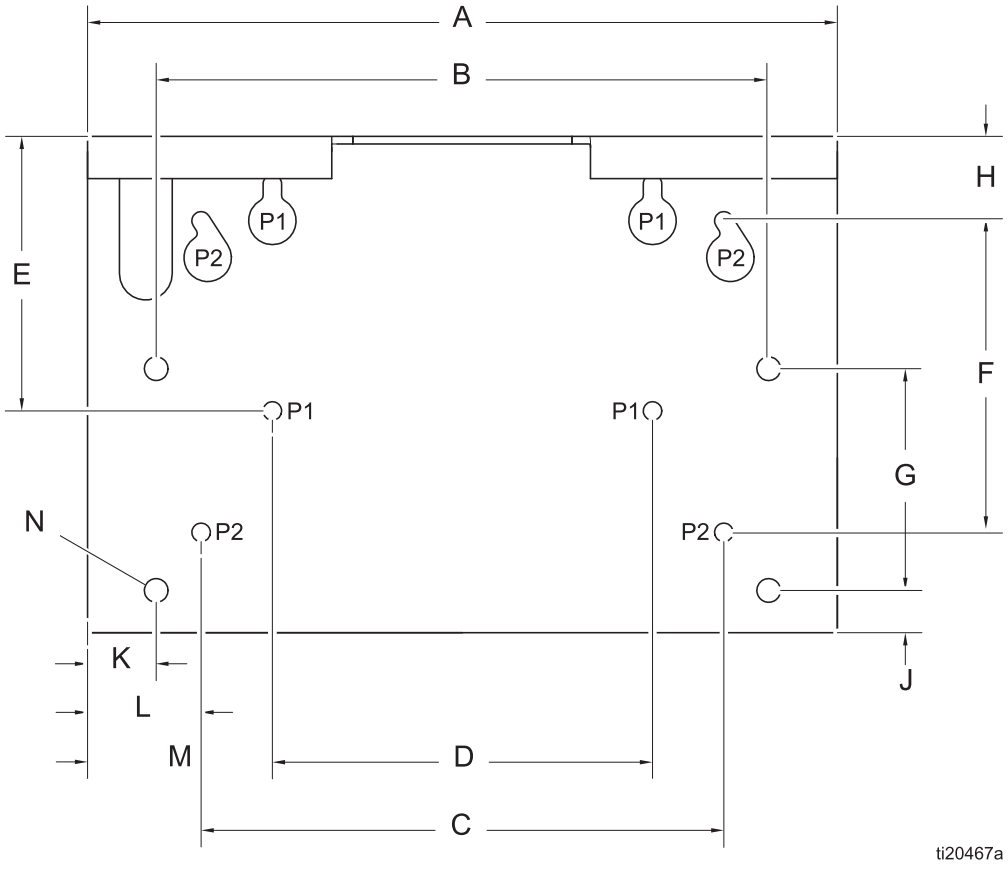


Mounting Stand Hole Layouts

253692 Floor Stand (for 750, 1000, 1500, and 2000cc Pumps)



255143 Wall Mount Bracket



A	17.8 in. (451 mm)
B	14.5 in. (368 mm)
C	12.4 in. (314 mm)
D	9.0 in. (229 mm)
E	5.4 in. (137 mm)
F	7.4 in. (187 mm)
G	5.3 in. (133 mm)
H	2.0 in. (51 mm)
J	1.0 in. (25 mm)
K	1.6 in. (41 mm)
L	2.7 in. (69 mm)
M	4.4 in. (112 mm)
N	Four 0.562 in. (14 mm) diameter holes for mounting to stand
P	Four 0.438 in. (11 mm) diameter holes for mounting to wall

Performance Charts

To find Fluid Outlet Pressure (psi/MPa/bar) at a specific fluid flow (lpm/gpm) and operating hydraulic 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). Follow left to scale to read fluid outlet pressure.

See **Models** on page 3 for your pump part number.

To find Motor Hydraulic Oil Consumption (l/min. or gpm) at a specific fluid flow (l/min. or gpm):

1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with hydraulic oil consumption curve (dashes). Follow right to scale to read hydraulic oil consumption.

Key:

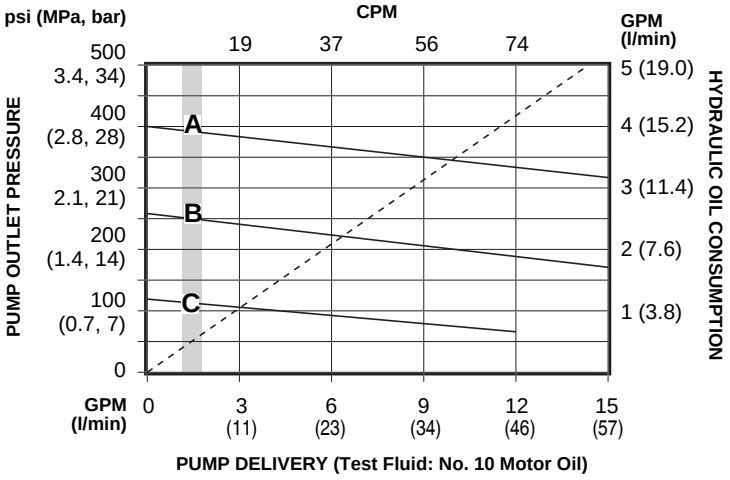
A 10.3 MPa, 103 bar (1500 psi) hydraulic pressure

B 7.2 MPa, 72.4 bar (1050 psi) hydraulic pressure

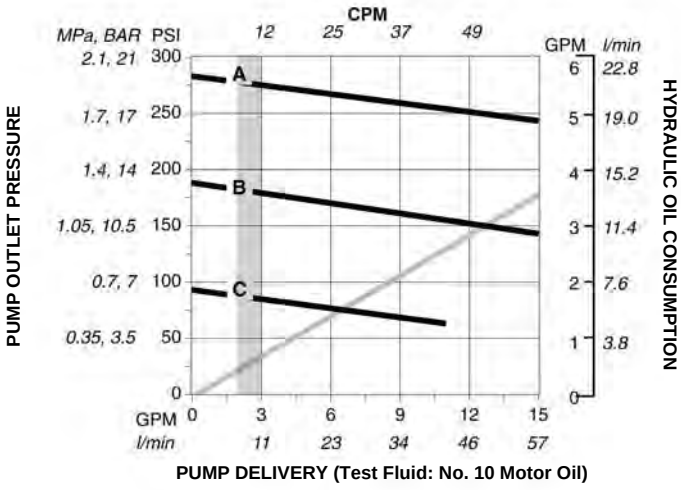
C 4.1 MPa, 41 bar (600 psi) hydraulic pressure

The shaded area within the table shows the recommended range for continuous duty circulation applications.

Viscount I Plus Motor, 750cc Lower



Viscount I Plus Motor, 1000cc Lower



See **Models** on page 3 for your pump part number.

Key:

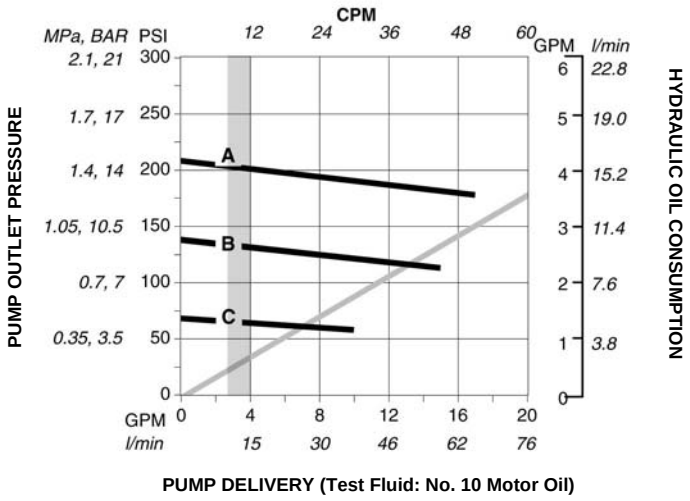
A 10.3 MPa, 103 bar (1500 psi) hydraulic pressure

B 7.2 MPa, 72.4 bar (1050 psi) hydraulic pressure

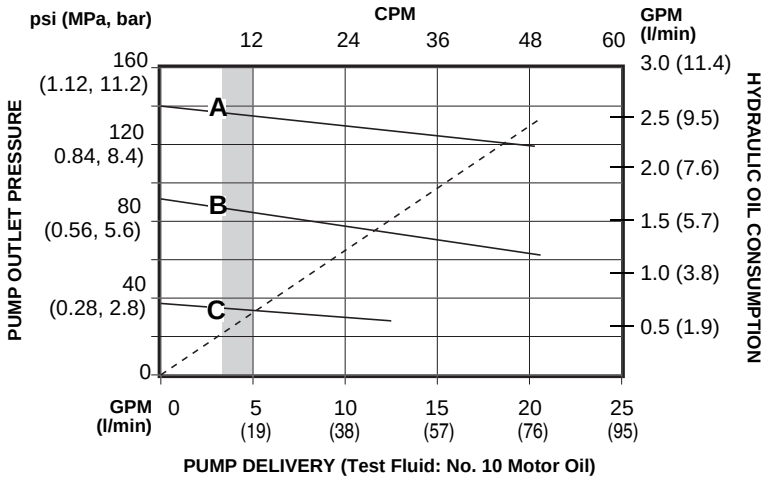
C 4.1 MPa, 41 bar (600 psi) hydraulic pressure

The shaded area within the table shows the recommended range for continuous duty circulation applications.

Viscount I Plus Motor, 1500cc Lower



Viscount I Plus Motor, 2000cc Lower



See **Models** on page 3 for your pump part number.

Key:

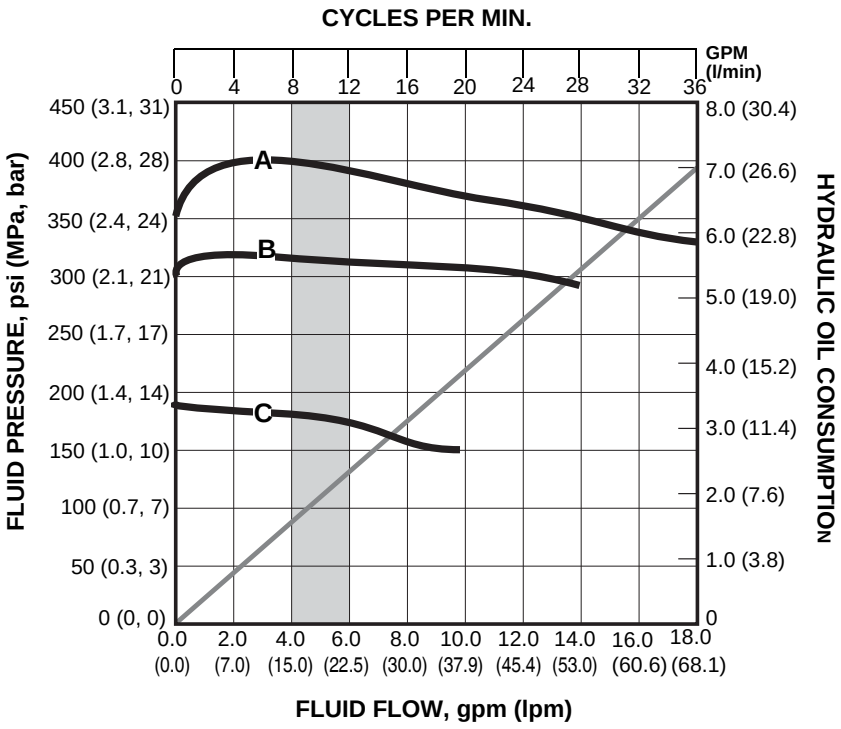
A 10.3 MPa, 103 bar (1500 psi) hydraulic pressure

B 7.2 MPa, 72.4 bar (1050 psi) hydraulic pressure

C 4.1 MPa, 41 bar (600 psi) hydraulic pressure

The shaded area within the table shows the recommended range for continuous duty circulation applications.

Viscount II Motor, 2000cc Lower



Notes

Technical Data

Viscount 1 Motor with 750, 1000, 1500, and 2000cc Pumps		
	U.S.	**Metric**
Lower Size		
17K963, 17K964, and 17K965	750cc	
17E238,17E239, 17E240, 17E241	1000cc	
17E234,17E235, 17E236, 17E237	1500cc	
17E230,17E231 17E232, 17E233	2000cc	
Max. Fluid Working Pressure		
17K963, 17K964, 17NK965	450 psi	3.1 MPa, 31.0 bar
17E238,17E239, 17E240, 17E241	300 psi	2.1 MPa, 21.0 bar
17E234, 17E235, 17E236, 17E237	225 psi	1.6 MPa, 16.0 bar
17E230,17E231 17E232, 17E233	167 psi	1.2 MPa, 12.0 bar
Max. Hydraulic Working Pressure	1500 psi	10.3 MPa, 103.0 bar
Hydraulic Oil Consumption	See Performance Charts in Manual	See Performance Charts in Manual
Max. Hydraulic Motor Fluid Temperature	134°F	54°C
Fluid Flow at 60 cycles per minute gpm (lpm)		
17K963, 17K964, 17K965	9.6 gpm	36.4 lpm
17E238,17E239, 17E240, 17E241	14.1 gpm	53.5 lpm
17E234, 17E235, 17E236, 17E237	19.4 gpm	73.6 lpm
17E230,17E231 17E232, 17E233	26.8 gpm	101.5 lpm
Output per Cycle (cc)		
17K963, 17K964, 17K965	610cc per cycle	
17E238,17E239, 17E240, 17E241	890cc per cycle	
17E234, 17E235, 17E236, 17E237	1230cc per cycle	
17E230,17E231 17E232, 17E233	1690cc per cycle	
Maximum Fluid Temperature Rating	150°F	66°C
Maximum Continuous Cycle Rate (Sealed Lowers)	20 cpm	
Maximum Continuous Cycle Rate (Open Lowers)	12 cpm	

Sound data: See Viscount I manual 308330.

Wetted parts: See 4-Ball Lower manual 3A3452 (Open Wet Cup) or 333022 (Sealed).

Viscount 2 Motor with 1500 and 2000cc Pumps		
	U.S.	**Metric**
Lower Size		
17E242,17E243 17E244, 17E245	2000cc	
Max. Working Pressure		
17E242,17E243 17E244, 17E245	460 psi	3.2 MPa, 32.0 bar
Max. Hydraulic Working Pressure	1200 psi	8.3 MPa, 83 bar
Hydraulic Oil Consumption	See Performance Charts in Manual	See Performance Charts in Manual
Max. Hydraulic Motor Fluid Temperature	134°F	54°C
Fluid Flow at 60 cycles per minute gpm (lpm)		
17E242,17E243 17E244, 17E245	31.5 gpm	119.3 lpm
Output per Cycle (cc)		
17E242,17E243 17E244, 17E245	2000 cc per cycle	
Maximum Fluid Temperature Rating	150°F	66°C
Maximum Continuous Cycle Rate (Sealed Lowers)	20 cpm	
Maximum Continuous Cycle Rate (Open Lowers)	12 cpm	

Sound data: See Viscount II motor manual 308048.

Wetted parts: See 4-Ball Lower manual 3A3452 (Open Wet Cup) or 333022 (Sealed).

California Proposition 65

CALIFORNIA RESIDENTS

⚠ **WARNING:** Cancer and reproductive harm. – www.P65warnings.ca.gov.

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Original instructions. This manual contains English. MM 3A3381

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