Instructions - Parts List

MR 4-Ball 3400/1500 and 3400/2000; LR 4-Ball 6500/2000

3A2024E

EN

Air-powered pumps for low pressure oil transfer.
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.

Models:

MR 4-Ball - 24J091, 24J092, 24M673, 24M674
LR 4-Ball - 24J093, 24J327

Maximum Working Pressure:

MR 4-Ball Models:
24J091, 24M673- 450 psi (3.1 MPa, 31 bar)
24J092,24M674 - 350 psi (2.4 MPa, 24 bar

LR 4-Ball Models:
24J093, 24J327 - 500 psi (3.4 MPa, 34 bar)

Maximum Air Pressure:

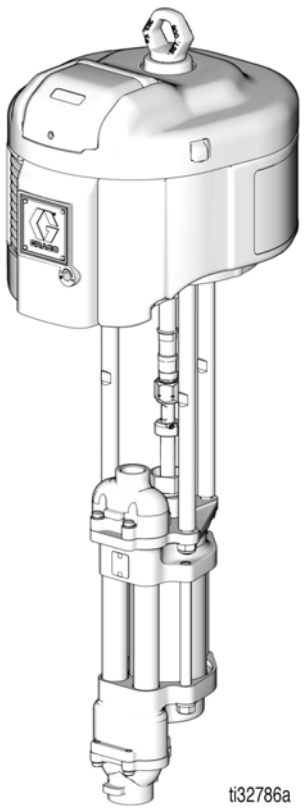
MR 4-Ball Models:
24J091, 24J092, 24M673, 24M674- 100 psi (0.7 MPa, 7 bar)

LR 4-Ball Models:
24J093, 24J327 - 75 psi (0.5 MPa, 5 bar)

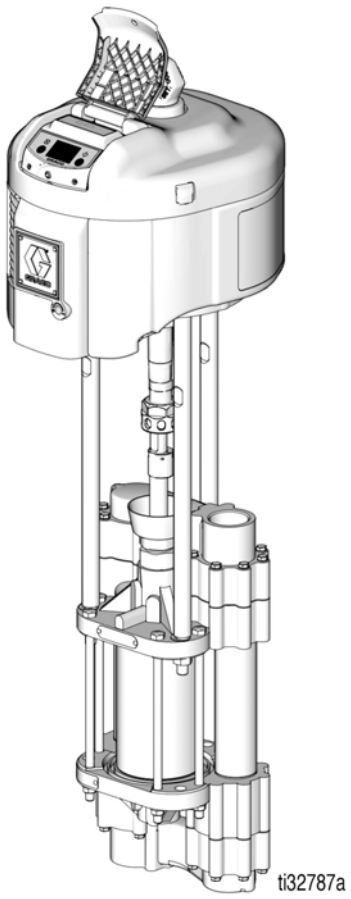
US Patent Pending

Related Manuals

Part No.	Description
311238	NXT Air Motor manual
3A2023	4-Ball Lower manual



MR 4-Ball Models 24J091, 24J092, 24M673, and 24M674



LR 4-Ball Models 24J093 and 24J327

II 2 G Ex h IIB T3 Gb

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, 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. 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 arc).
- 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.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

Static charge may build up on plastic parts during cleaning and could discharge and ignite flammable vapors. To help prevent fire and explosion:

- Clean plastic parts only in a well ventilated area.
- Do not clean with a dry cloth.
- Do not operate electrostatic guns in equipment work area.

PRESSURIZED EQUIPMENT HAZARD

Fluid from the gun/dispense valve, 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 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.


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 MSDSs 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.

⚠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 MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. 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.
- 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.

PERSONAL PROTECTIVE EQUIPMENT

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, hearing loss, inhalation of toxic fumes, and burns. This 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. Remove the green ground screw (Z) from the bottom of the air motor. Insert the screw through the loop on the end of the ground wire (Y) and reattach the screw to the air motor. Connect the ground clamp to a true earth ground. Order Part No. 244524, Ground Wire and Clamp.

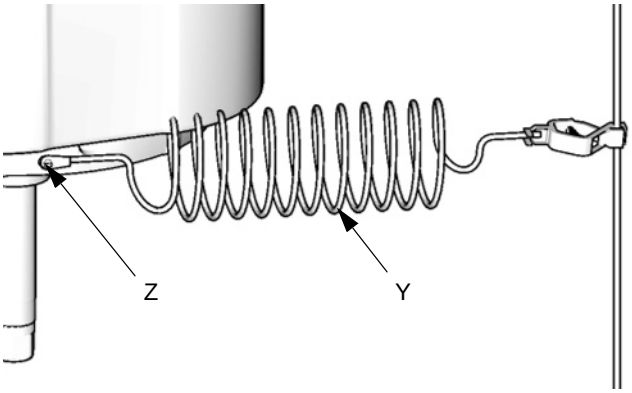


FIG. 1. Ground Wire

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.

Air compressor: 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 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.

Stand Mount

Mount the pump in the accessory pump stand (B). Use Part No. 253692 Stand for Models 24J091, 24J092, 24M673, and 24M674 (see FIG. 2, page 6) and Part No. 218742 Stand for Models 24J093 and 24J327 (see FIG. 3, page 7).

See **Mounting Stand Hole Layouts** on page 17. 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 the fluid suction line 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 18.
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 9.

Accessories

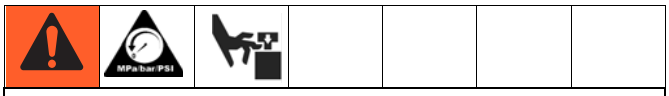
Install the following accessories in the order shown in FIG. 2 and FIG. 3, using adapters as necessary.

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

Air Line

See FIG. 2 and FIG. 3.

- **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.

NOTICE

Exceeding the maximum pressure rating for your motor model will result in equipment installed downstream in the system to also exceed their maximum pressure ratings. To prevent equipment damage caused by over pressurizing, install a safety relief valve between the bleed-type master air valve and the air motor.

- Air motor models 24J091, 24J092, 24M673, and 24M674 are rated to 100 psi (0.7 MPa, 7.0 bar).
- Air motor models 24J093 and 24J327 are rated to 75 psi (0.5 MPa, 5.0 bar)

- **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 (H):** isolates air line accessories for servicing. Locate upstream from all other air line accessories.

Fluid Line

See FIG. 2 and FIG. 3.

- **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 (N):** required in your system, to relieve fluid pressure in the hose and gun.
- **Fluid shutoff valve (D):** shuts off fluid flow.

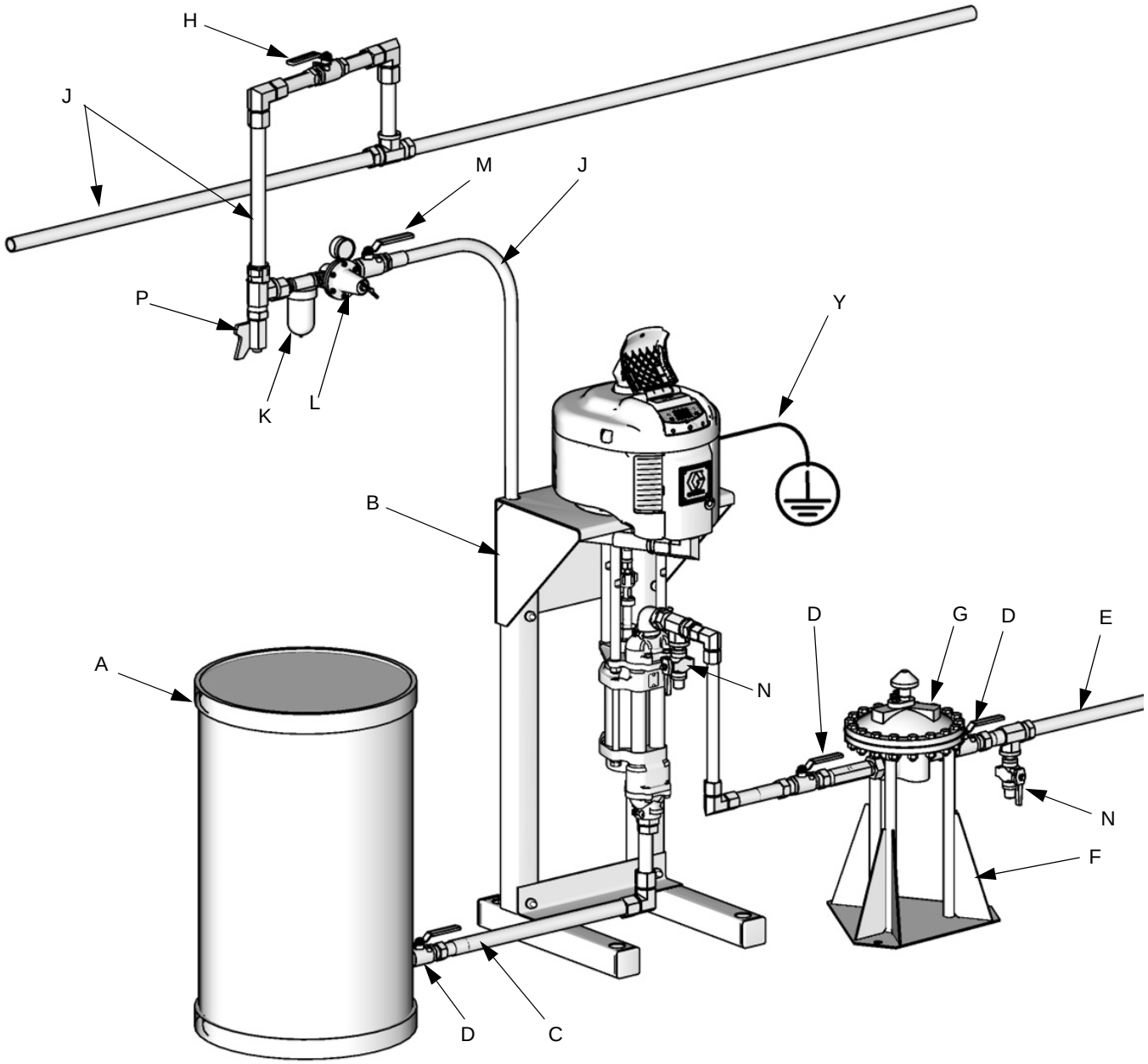


FIG. 2. Typical Installation for Models 24J091, 24J092, 24M673, 24M674

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
F Surge Tank Stand
G Surge Tank
H Air Shutoff Valve (bleed-type)
J Air Supply Line
K Air Line Filter
L Air Regulator and Gauge
M Bleed-Type Master Air Valve
N Fluid Drain Valve
P Air Line Drain Valve
Y Pump Ground Wire (required see page 4 for installation)

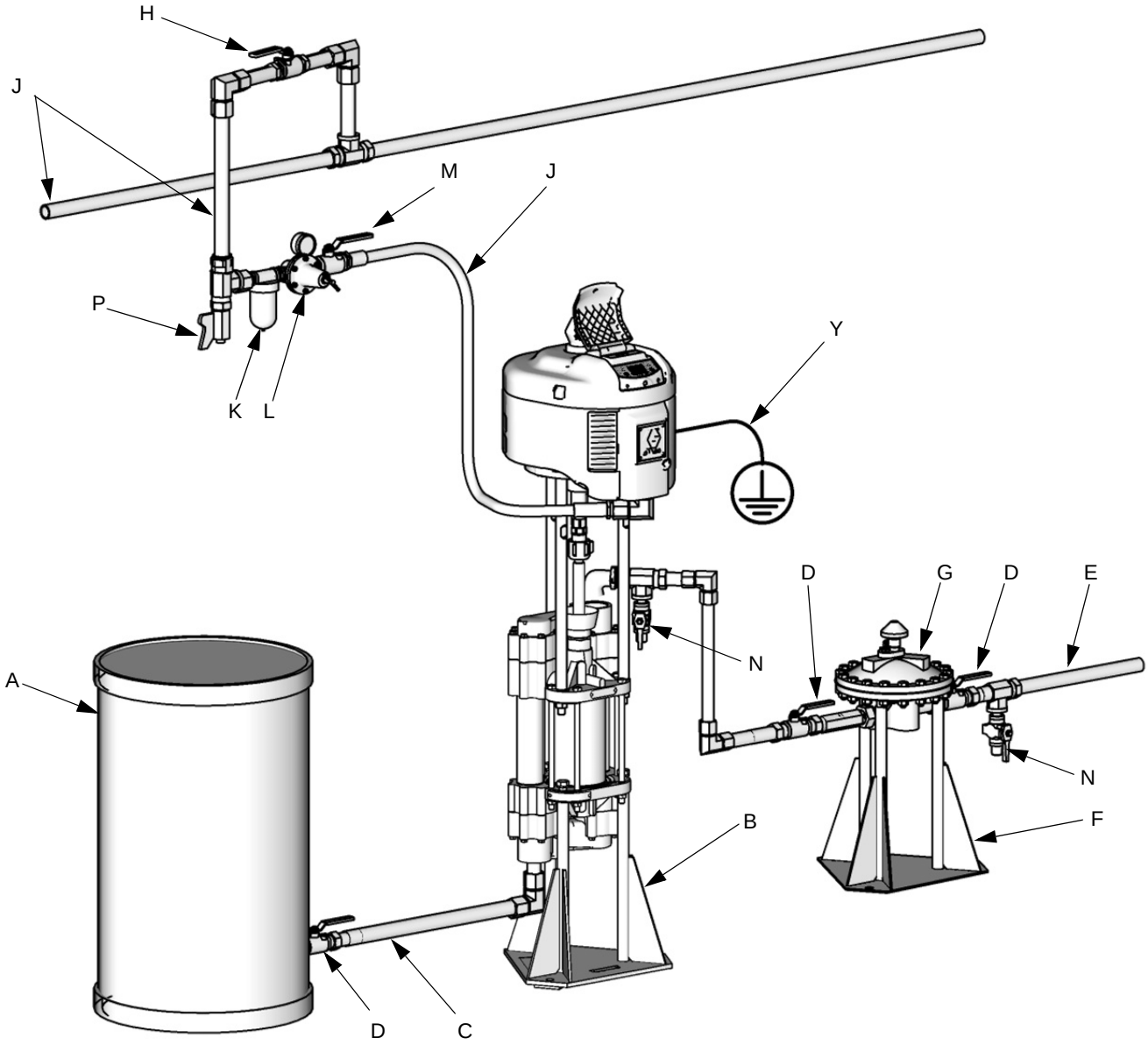


FIG. 3. Typical Installation for Models 24J093 and 24J327

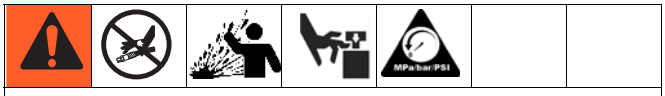
Key:

A Mix Tank
B 218742 Pump Stand
C Fluid Supply Line; 2 in. (50 mm) minimum diameter
D Fluid Shutoff Valve
E Fluid Line
F Surge Tank Stand
G Surge Tank
H Air Shutoff Valve (bleed-type)
J Air Supply Line
K Air Line Filter
L Air Regulator and Gauge
M Bleed-Type Master Air Valve
N Fluid Drain Valve
P Air Line Drain Valve
Y Pump Ground Wire (required see page 4 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 pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop pumping and before cleaning, checking, or servicing the equipment.

1. Close the bleed-type master air valve.
2. Open the dispensing valve, if used.
3. Open all fluid drain valves (N) in the system, having a waste container ready to catch drainage. Leave drain valve(s) open until you are ready to spray again.

Prime the Pump

1. Close pump air regulator (L) by turning knob counterclockwise reducing pressure to zero. Close bleed-type air valve (M). Also verify that all drain valves (N) are closed.
2. Connect air line (J) to bleed type air valve (M).
3. Check that all fittings throughout system are tightened securely.
4. Connect the fluid supply line (C) from the mix tank shutoff valve (D) to the pump.
5. Connect the fluid line (E) to the pump outlet.

NOTE: If your pump has DataTrak, see your separate NXT air motor manual for DataTrak instructions.

6. *Units with runaway protection only:* enable the prime/flush function by pushing the prime/flush button on the DataTrak.
7. Open bleed-type air valve (M). Slowly turn pump air regulator (L) clockwise, increasing pressure until pump starts.
8. Cycle pump slowly until all air is pushed out and pump and hoses are fully primed.
9. *Units with runaway protection only:* disable the prime/flush function by pushing the prime/flush button on the DataTrak.
10. Verify that pump actuations are priming the pump wet-cup. If not, confirm that reservoir check valves are not stuck closed.
11. 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 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.

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 Pressure Relief Procedure, page 8.

Always flush the pump before the fluid dries on the displacement rod. See **Flushing** on page 9.

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 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.

Air Line Filter

Drain and clean as necessary.

Mix Tank Volume

NOTICE

Do not 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.

Stall Test

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.

NOTICE

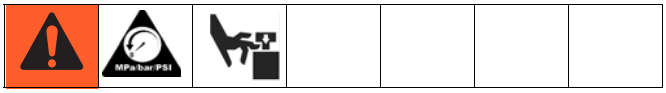
Do not allow the pump to run quickly for a long period of time as this may damage the packings.

Stop the pump on the downstroke, 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 when the pump is restarted.

Troubleshooting



Problem	Cause	Solution
Pump output low on both strokes.	Restricted air 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 reprime 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 reprime pump.
	Held open or worn ball check valves.	Check and repair.
	Worn piston packing.	Replace. See lower manual.
Pump will not operate.	Restricted air 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.	See air motor manual.
	Fluid dried on piston rod.	Disassemble and clean pump. See lower manual. In future, stop pump at bottom of stroke.

Repair

Disassembly

NOTE: Models 24J093 and 24J327 are easiest to repair when left in the Part No. 218742 accessory pump stand and disassembled as instructed in the lower manual. For repair at a remote location, have another pump stand available.

1. Relieve the pressure, see **Prime the Pump** page 8.
2. Disconnect the hoses from the lower and plug the ends to prevent fluid contamination.
3. Loosen the coupling nut (103) and remove the collar (104). (FIG. 4). Remove the coupling nut from the piston rod (R). Unscrew the locknuts (107) from the tie rods (106). Separate the motor (101) and lower (102). (See FIG. 6, page 12).

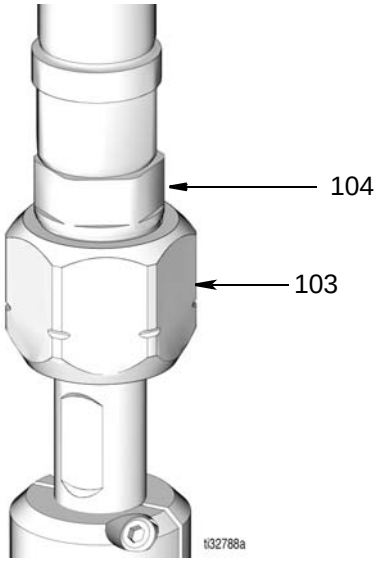


FIG. 4.

4. To repair the air motor or lower, see the separate manuals listed under **Related Manuals** on page 1.

Reassembly

NOTE: If the coupling adapter (105) and tie rods (106) have been disassembled from the motor, see FIG. 6, page 12.

1. See FIG. 6. Assemble the coupling nut (103) to the piston rod (R).
2. Orient the lower (102) to the motor (101). Position the lower on the tie rods (106). Lubricate the threads of the tie rods. Screw the tie rod locknuts (107) onto the tie rods. Tighten the locknuts and torque to 50-60 ft-lb (68-81 N•m).
3. Insert the collars (104) into the coupling nut (103). Tighten the coupling nut onto the coupling adapter (105) and torque as specified in Table 1, page 12.
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.
5. Reconnect the pump ground wire before operating.

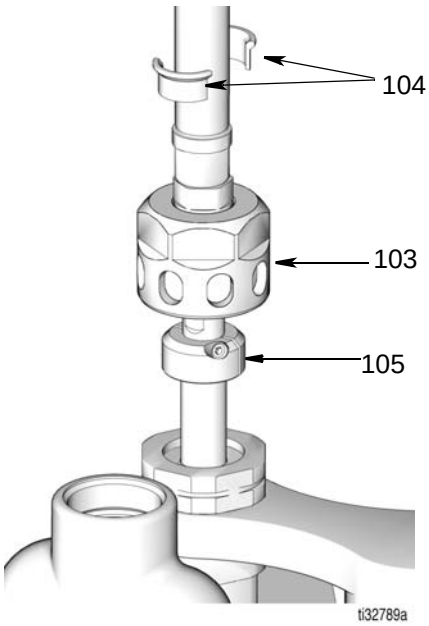


FIG. 5.

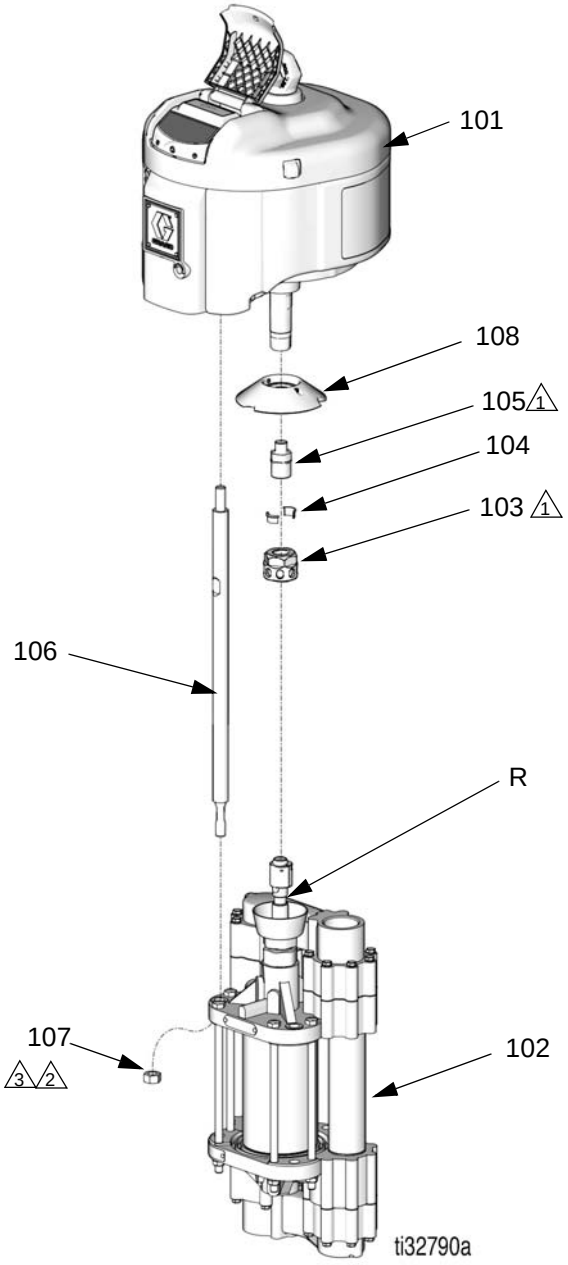
Reassemble the Coupling Adapter and Tie Rods to the Motor

NOTE: Use this procedure only if the coupling adapter (105) and tie rods (106) have been disassembled from the motor, to ensure proper alignment of the motor shaft to the piston rod (R).

1. See FIG. 6. Screw the tie rods (106) into the motor (101) and torque to 50-60 ft-lb (68-81 N•m).
2. Fill the cavity in the bottom of the motor shaft with grease. Install the moisture cover (108) on the motor shaft. Screw the coupling adapter (105) into the motor shaft and torque as specified in Table 1.
3. Assemble the coupling nut (103) to the piston rod (R).
4. Orient the lower (102) to the motor (101). Position the lower on the tie rods (106). Lubricate the threads of the tie rods. Screw the tie rod locknuts (107) onto the tie rods. Tighten the locknuts and torque to 50-60 ft-lb (68-81 N•m).
5. Insert the collars (104) into the coupling nut (103). Tighten the coupling nut onto the coupling adapter (105) and torque as specified in Table 1.

Table 1: Coupler Torque Values

Pump Part No.	Coupler Torque Value (items 103 and 105)
24J091 24J092 24M673 24M674	90-100 ft-lb (122-135 N•m)
24J093 24J327	145-155 ft-lb (196-210 N•m)



1 Torque as specified in Table 1.

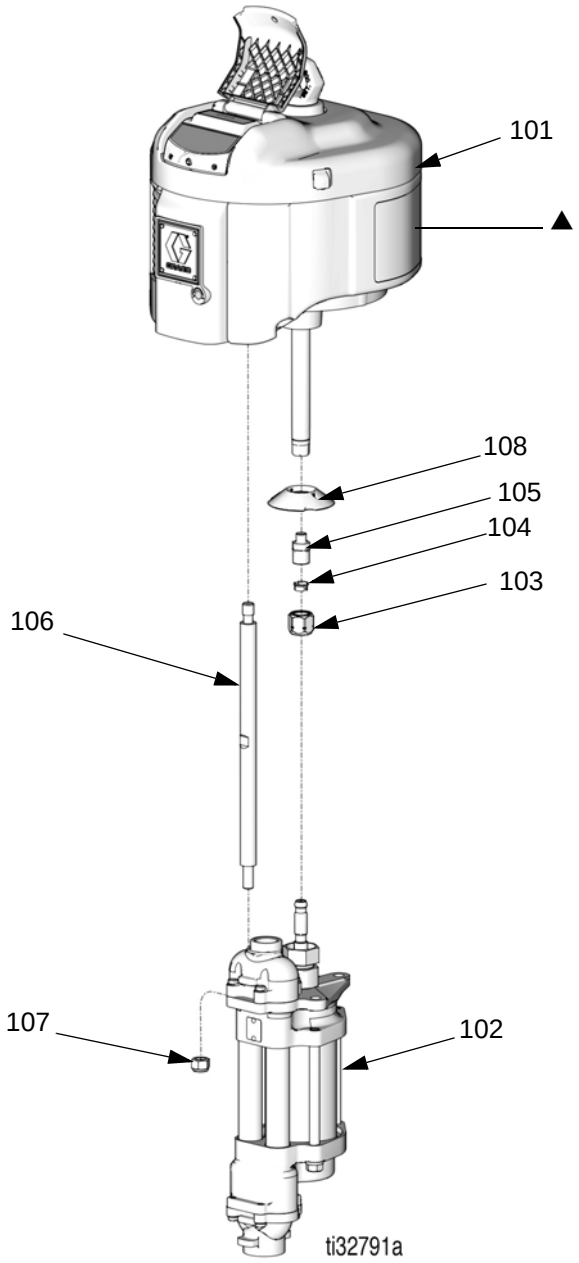
2 Torque to 50-60 ft-lb (68-81 N•m).

3 Apply lubricant.

FIG. 6 (Model 24J093 shown)

Parts

Models 24J091, 24J092, 24M673, 24M674



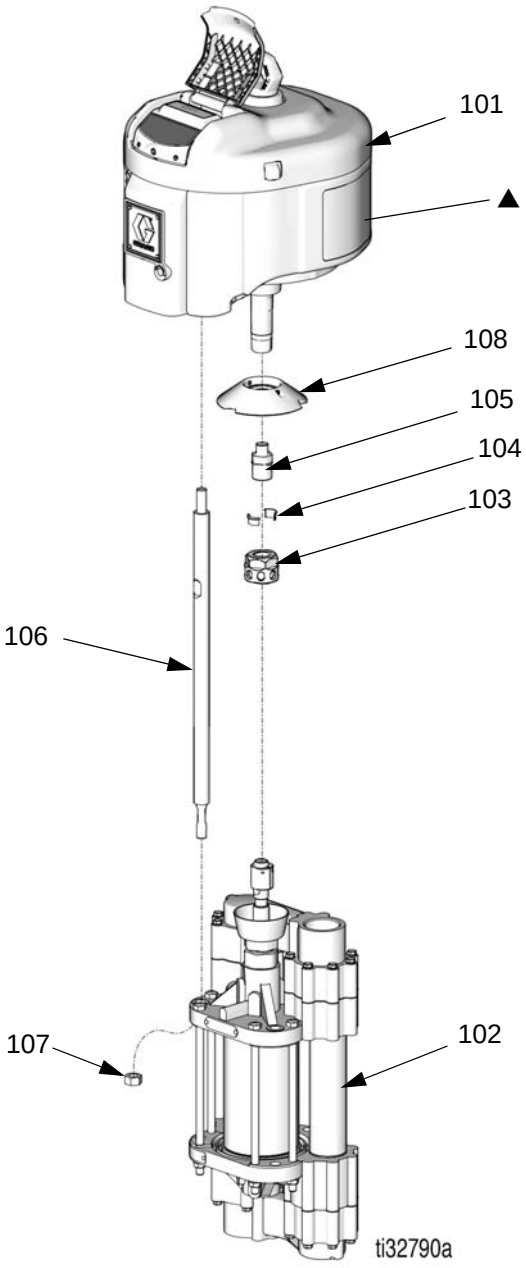
Common Parts

Ref. No.	Description	Part No.	Qty.
101	MOTOR, NXT, see manual 311238	see tables, below	1
102	LOWER, 4-Ball, see manual 3A2023	see tables, below	1
103	NUT, coupling	17F000	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
▲	LABEL, warning	15F674	1

▲*Replacement Danger and Warning labels, tags, and cards are available at no cost.*

		101	102
Pump	**Pump Series**	**NXT Air Motor (see 311238)**	**4-Ball Lower (see 3A2023)**
24J091	**A**	N34LN0	24J088
24J092	**A**	N34LN0	24J089
24M673	**A**	N34LT0	24J088
24M674	**A**	N34LT0	24J089

Models 24J093 and 24J327



Common Parts

Ref. No.	Description	Part No.	Qty.
101	MOTOR, NXT, see manual 311238	see table below	1
102	LOWER, 4-Ball, see manual 3A0540	see table below	1
103	NUT, coupling	186925	1
104	COLLAR, coupling	184129	2
105	ADAPTER, coupling	15H370	1
106	TIE ROD, 19.307 in. (490.398 mm) between shoulders	15H600	3
107	NUT, lock, hex; 5/8-11	102216	3
108	COVER, moisture	247362	1
▲	LABEL, warning	15F674	1

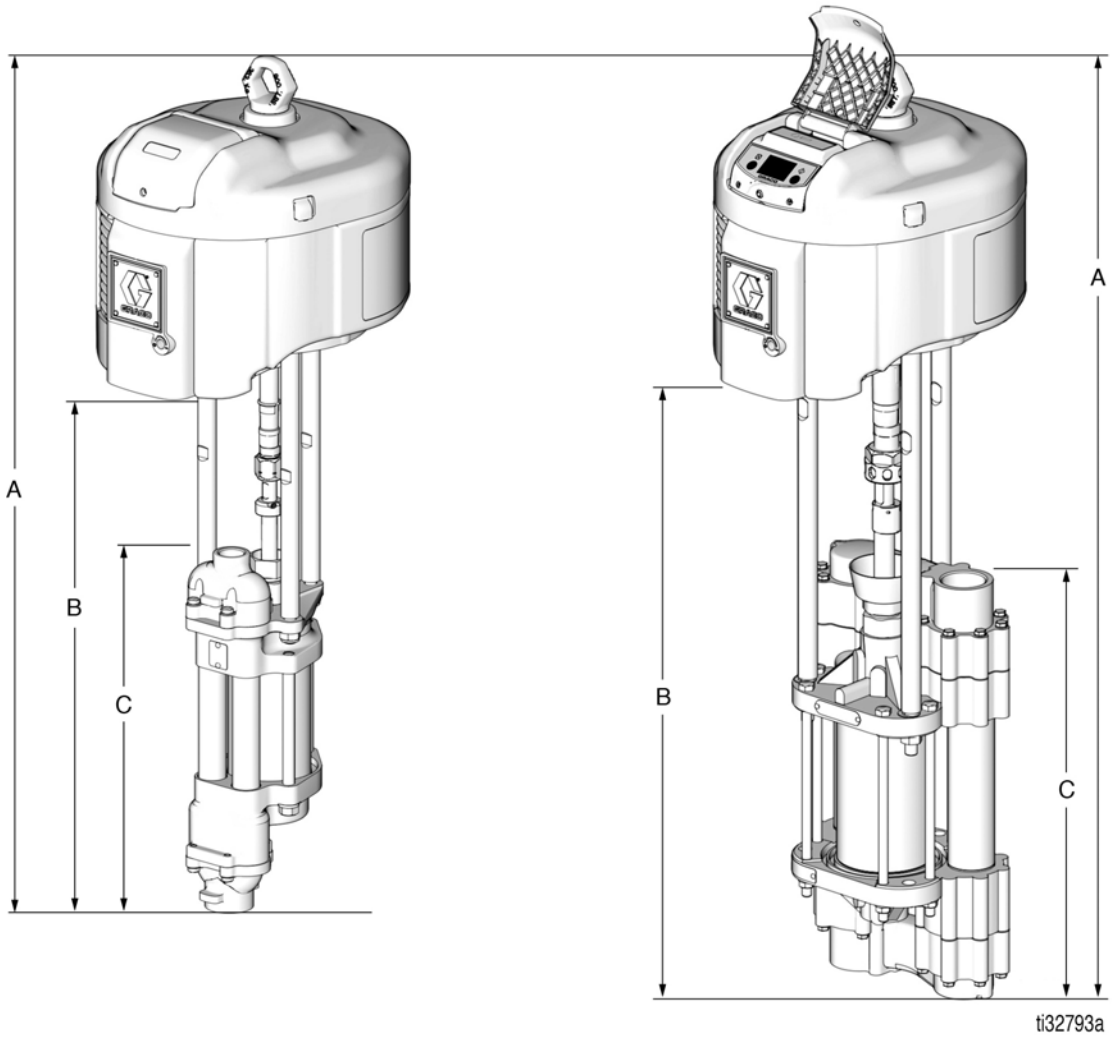
▲*Replacement Danger and Warning labels, tags, and cards are available at no cost.*

		101	102
Pump	**Pump Series**	**NXT Air Motor (see 311238)**	**4-Ball Lower (see 3A2023)**
24J093	**A**	N65LN0	24J090
24J327	**A**	N65LT0	24J090

Dimensions

Models 24J091, 24J092, 24M673, 24M674

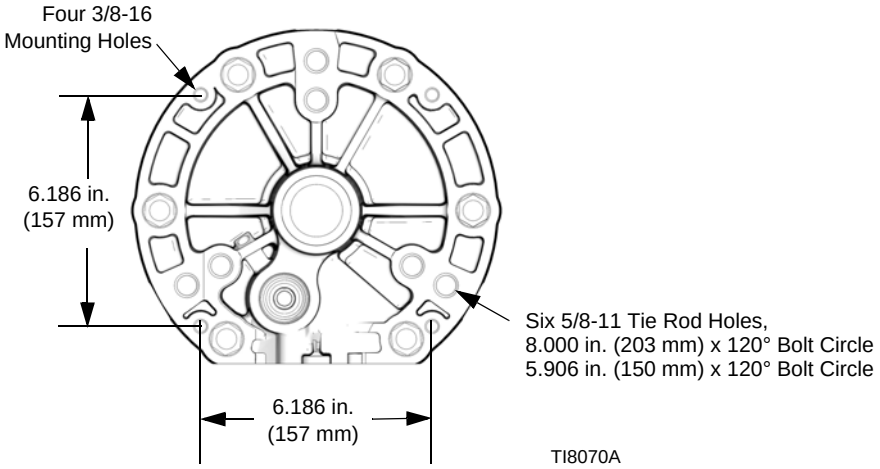
Models 24J093 and 24J327



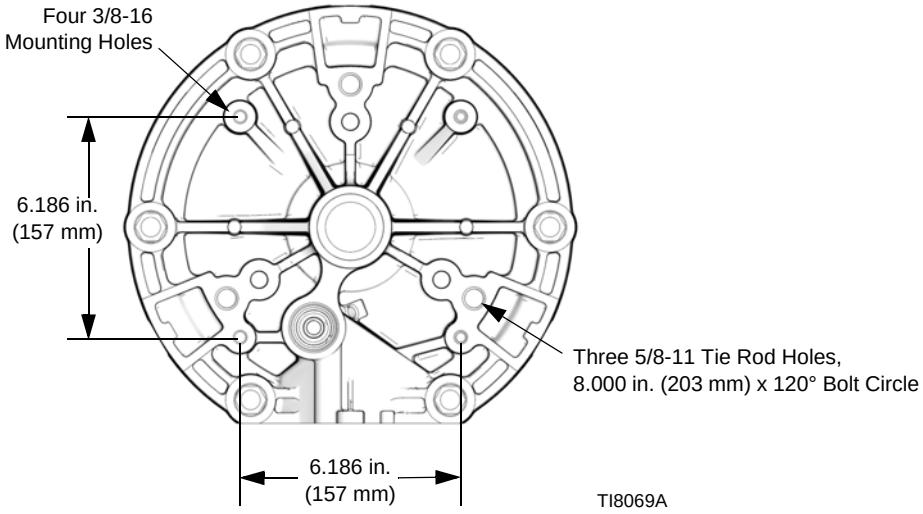
Model	Motor	Lower Model	A in. (mm)	B in. (mm)	C in. (mm)	Approx. Weight lb (kg)
24J091 24J092 24M673 24M674	NXT3400	24J088 24J089	45.6 (1158)	28.78 (731)	17.4 (442)	99 (44.9)
24J093 24J327	NXT6500	24J090	51.4 (1306)	35.5 (901)	23.0 (584)	178 (80.7)

Motor Mounting Hole Diagrams

NXT Model 3400

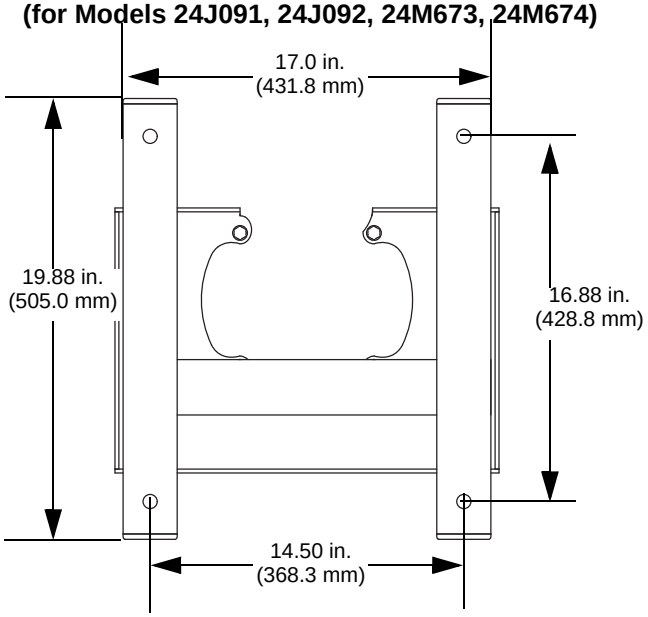


NXT Model 6500



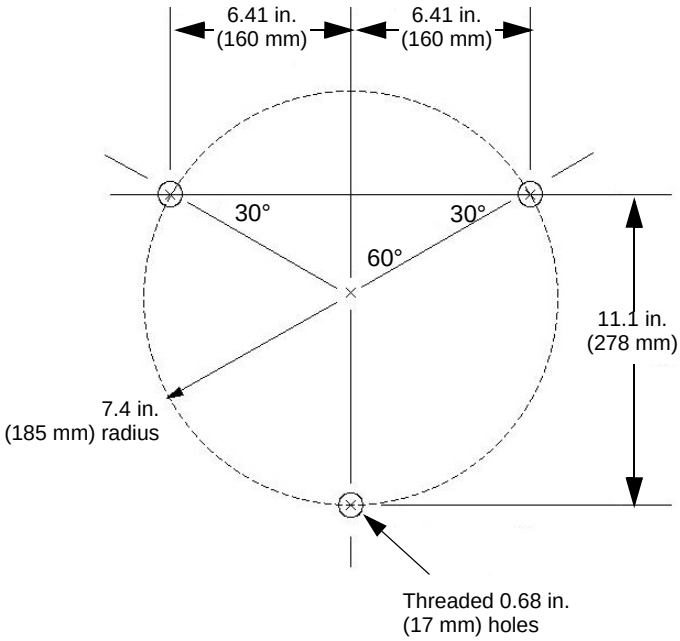
Mounting Stand Hole Layouts

253692 Floor Stand
(for Models 24J091, 24J092, 24M673, 24M674)

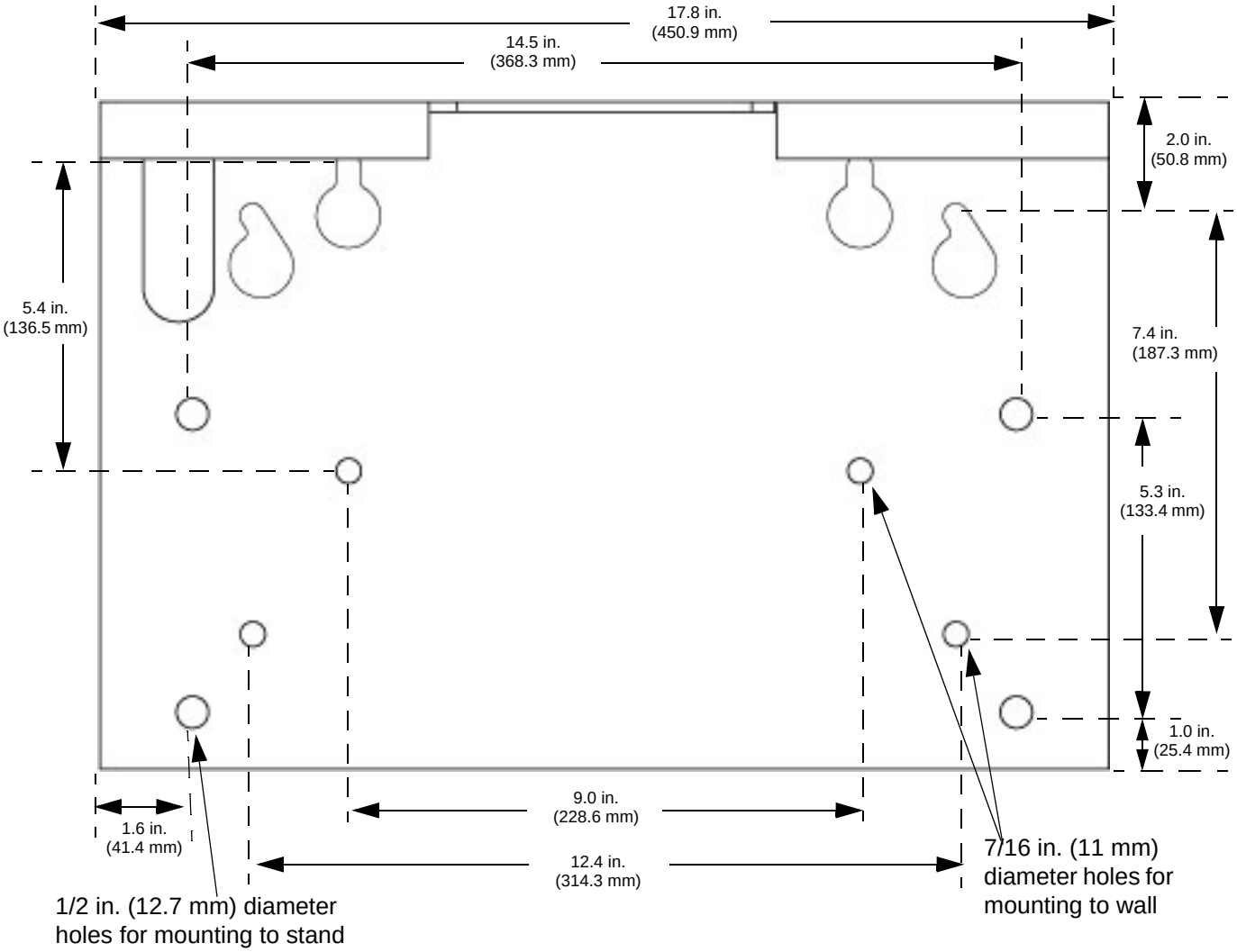


TI15859a

218742 Floor Stand
(for Models 24J093 and 24J327))



255143 Wall Mount Bracket



Technical Data

Model	Maximum Working Pressure psi (MPa, bar)	Maximum Air Input Pressure psi (MPa, bar)	Fluid Flow at 60 cycles per minute gpm (lpm)	Output per Cycle (cc)	Maximum Fluid Temperature Rating °F (°C)	Air Consumption
24J091 24M673	450 (3.1, 31.0)	100 (0.7, 7.0)	23.2 (87.9)	1500	150° (66°)	See Performance Charts
24J092 24M674	350 (2.4, 24.0)	100 (0.7, 7.0)	31.5 (119.3)	2000		
24J093 24J327	500 (3.4, 34.0)	75 (0.5, 5.0)	31 (118)	2000		

Sound data: See NXT motor manual 311238.

Wetted parts: See 4-Ball Lower manual 3A2023.

Performance Charts

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.

Air Consumption - Gray Curves

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

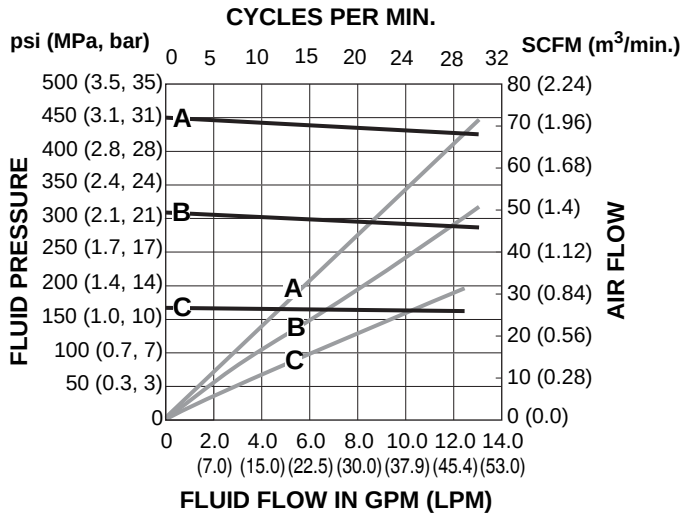
1. Locate desired flow along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve (dashes).
3. Follow right to scale to read air consumption.

Key:

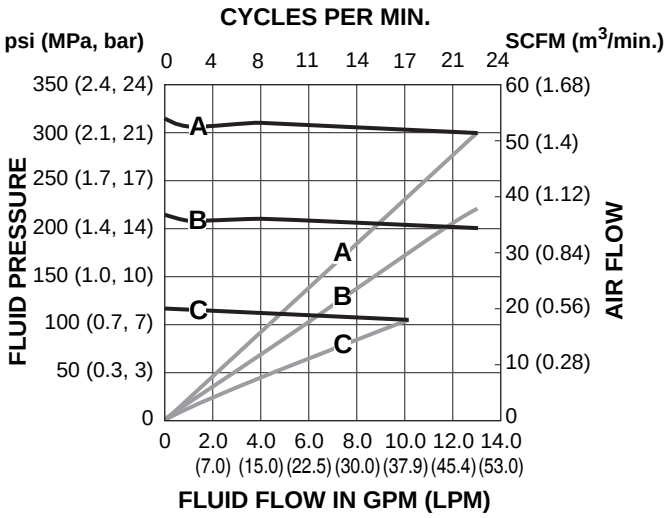
A 100 psi (0.7 MPa, 7.0 bar) air pressure
B 70 psi (0.49 MPa, 4.9 bar) air pressure
C 40 psi (0.28 MPa, 2.8 bar) air pressure

NOTE: The **Performance Charts** Key on page 19 explains how to read the charts.

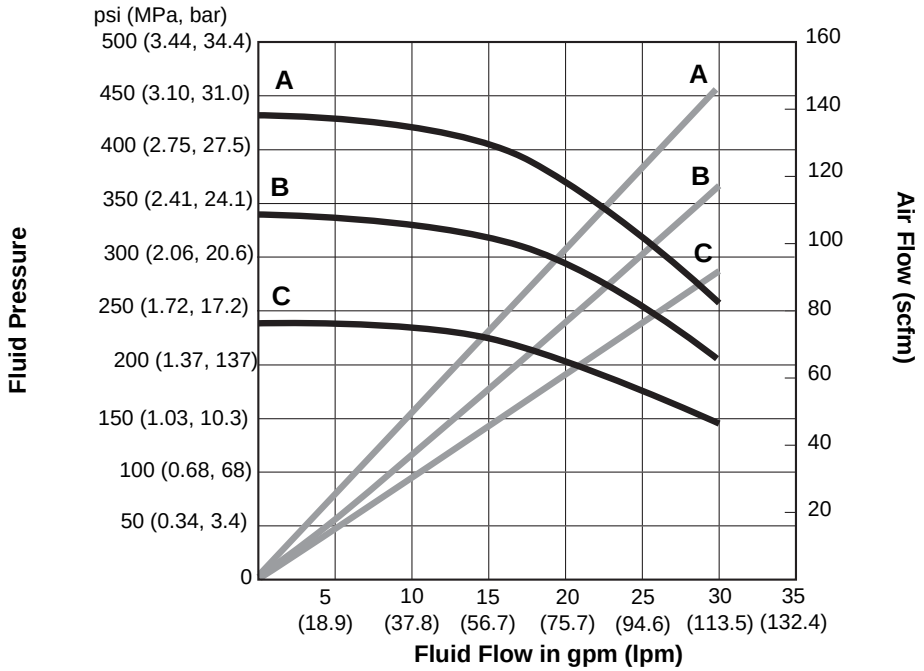
NXT 3500 Model 24J091, 24M673



NXT 3500 Model 24J092, 24M674



NXT 6500 Air Motor, Models 24J093 and 24J327



Notes

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
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. 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.

Graco Information

For the latest information about Graco products, visit 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 3A2024

Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441

www.graco.com
Revision E June 2018