

Supply Systems

313526V

EN

Used to transfer medium to high viscosity sealants and adhesive materials, at ambient temperature, out of various sized material shipping containers. For professional use only.

S20 3 inch single post

20 liter (5 gallon)

125 psi (0.9 MPa, 9 bar) Maximum Air Inlet Pressure

D60 3 inch dual post

60 liter (16 gallon), 30 liter (8 gallon), 20 liter (5 gallon)

150 psi (1.0 MPa, 10 bar) Maximum Air Inlet Pressure

D200 3 inch dual post

200 liter (55 gallon), 115 liter (30 gallon), 60 liter (16 gallon), 30 liter (8 gallon), 20 liter (5 gallon)

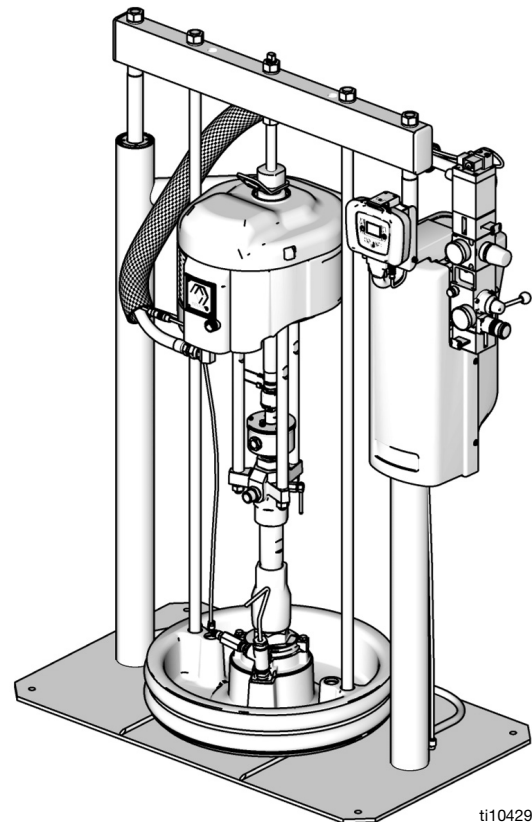
150 psi (1.0 MPa, 10 bar) Maximum Air Inlet Pressure

D200s 6.5 inch dual post

200 liter (55 gallon), 115 liter (30 gallon)

125 psi (0.9 MPa, 9 bar) Maximum Air Inlet Pressure

See page 4 for model information and approvals.



ti10429a

**D200
Model CM14BA**



Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Save these instructions.

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Related Manuals

Manual in English	Description
Supply Systems	
313527	Supply Systems Repair-Parts
313528	Tandem Supply Systems Operation
313529	Tandem Supply Systems Repair-Parts
3A8595	L20c Single Post Supply System Operation
Pump Packages	
312376	Check-Mate® Pump Packages Instruction-Parts
311828	Dura-Flo® Pump Packages (145cc, 180cc, 220cc, 290cc) Instructions-Parts Manual
311826	Dura-Flo Pump Packages (430cc, 580cc) Instructions-Parts Manual
311833	Two-Ball NXT® Pump Packages (1000cc) Instructions-Parts Manual
Pump Parts and Repair	
334198	55 Gallon (200 Liter), 16 Gallon (60 Liter), and 5 Gallon (20 Liter) Ram Modules Repair-Parts
312375	Check-Mate Displacement Pumps Instructions-Parts
3A8564	Check-Mate Elite Series Displacement Pumps Instructions-Repair-Parts
311827	Dura-Flo Displacement Pumps (145cc, 180cc, 220cc, 290cc) Instructions-Parts Manual
311825	Dura-Flo Displacement Pumps (430cc, 580cc) Instructions-Parts Manual
311717	Carbon Steel Displacement Pump (1000cc) Instructions-Parts Manual
312889	60 cc Check-Mate Displacement Pump Repair Parts Manual
312467	100 cc Check-Mate Displacement Pump Repair Parts Manual
312468	200 cc Check-Mate Displacement Pump Repair Parts Manual
312469	250 cc Check-Mate Displacement Pump Repair Parts Manual
312470	500 cc Check-Mate Displacement Pump Repair Parts Manual
Air Motors	
311238	NXT Air Motor (Nxxxxx models) Instructions-Parts
312796	NXT Air Motor (Mxxxxx models) Instructions-Parts

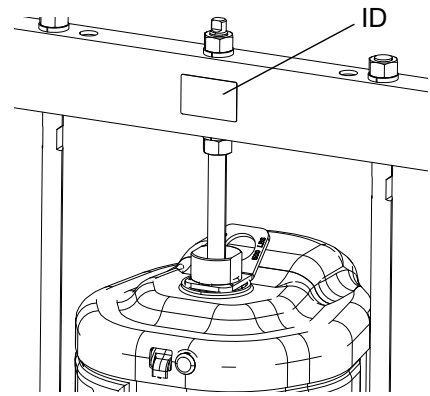
Manual in English	Description
334644	Xtreme® XL Air Motor, Instructions-Parts
Accessories	
312374	Air Controls Instructions-Parts
312491	Pump Fluid Purge Kit
312492	Drum Roller Kit Instruction
312493	Light Tower Kit Instruction
406681	Platen Cover Kit
334048	EPDM Hose Wiper Kit
312494	Enclosed Wetcup Recirculation Kit

Models

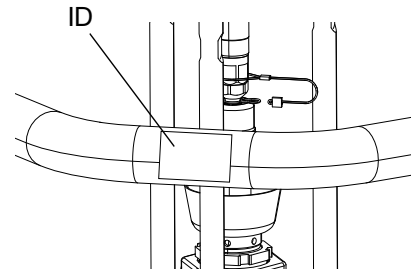
Check the identification plate (ID) for the 6-digit part number of the supply system. Use the following matrix to define the construction of the supply system, based on the six digits. For example, Part No. **CM14BA** represents a Check-Mate supply system (**CM**), a carbon steel Check-Mate 100 MaxLife® displacement pump with an NXT 2200 air motor with remote DataTrak™ (pump code **14**), a 3 in. dual post ram with integrated air controls (**B**) and a 55-gallon, uncoated platen with a neoprene seal (**A**).

Some configurations in the following matrix cannot be built. See the Product Selection guide for available systems.

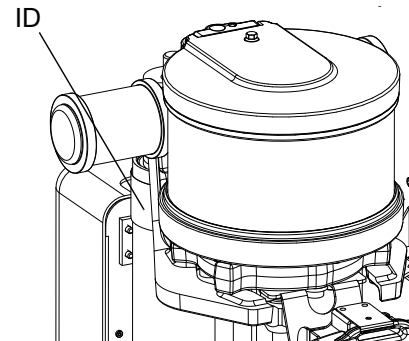
To order replacement parts, see the **Parts** section in the Supply Systems Repair-Parts manual. The digits in the matrix on the next page do not correspond to the Ref. Nos. in the Parts drawings and lists.



D200 and D200s Models



D60 Models



S20 Models

CM		14		B				A					
First and Second Digit		Third and Fourth Digit		Fifth Digit					Sixth Digit				
		Pump Code		Ram Options					Platen and Seal Options				
			Size	Model Name	DataTrak Voltage	Air Controls		Platen Size	Platen Style	Platen Material	Seal Material		
CM (Supply System with Check-Mate displacement pump)	(See Table 1 for 2-digit Dura-Flo Pump Code)	2	3 in.	S20c	no volt	INT	B	20 L (5 Gal)	F, SW	CS	Nitrile		
		3	3 in.	S20	no volt	INT	C	20 L (5 Gal)	F, SW	CS	Polyurethane		
		4	3 in.	D60	no volt	INT	F	20 L (5 Gal)	F, SW	SST	PTFE		
		5	3 in.	D200	no volt	INT	G	20 L (5 Gal)	F, DW	CS	Nitrile		
		6	3 in.	D200i	no volt	2-Button Interlock	H	20 L (5 Gal)	F, DW	CS	Polyurethane		
		7	6.5 in.	D200s	no volt	INT	P	20 L (5 Gal)	F, SW	CS	PVC		
		8	6.5 in.	D200si	no volt	2-Button Interlock	J	30 L (8 Gal)	F, SW	CS	Nitrile		
GD (Supply System with Dura-Flo displacement pump)	(See Table 2 for 2-digit Check-Mate Pump Code)	9	3 in.	D200	24 Vdc	INT	K	30 L (8 Gal)	F, SW	CS	Polyurethane		
		A	3 in.	D200i	24 Vdc	2-Button Interlock	L	30 L (8 Gal)	F, SW	SST	PTFE		
		B	3 in.	D200	100-240 Vac	INT	M	30 L (8 Gal)	F, DW	CS	Nitrile		
		C	3 in.	D200i	100-240 Vac	2-Button Interlock	R	30 L (8 Gal)	F, DW	CS	Polyurethane		
		F	6.5 in.	D200s	24 Vdc	INT	S	60 L (16 Gal)	F, SW	CS	Nitrile		
		G	6.5 in.	D200si	24 Vdc	2-Button Interlock	T	60 L (16 Gal)	F, SW	CS	Polyurethane		
		H	6.5 in.	D200s	100-240 Vac	INT	U	60 L (16 Gal)	F, SW	SST	PTFE		
		J	6.5 in.	D200si	100-240 Vac	2-Button Interlock	W	60 L (16 Gal)	F, DW	CS	Nitrile		
		L	3 in.	S20	100-240 Vac	INT	Y	60 L (16 Gal)	F, DW	CS	Polyurethane		
		M	3 in.	S20	24 Vdc	INT	7	115 L (30 Gal)	D	CS	EPDM		
		R	3 in.	D60	100-240 Vac	INT	8	200 L (55 Gal)	DR	PTFE coated AL	EPDM		
		T	3 in.	D60i	100-240 Vac	2-Button Interlock	9	200 L (55 Gal)	DR	Aluminum	EPDM		
		U	3 in.	D60	24 Vdc	INT	A	200 L (55 Gal)	DR	Aluminum	Neoprene		
W	3 in.	D60i	24 Vdc	2-Button Interlock	D	200 L (55 Gal)	DR	Aluminum	EPDM Hose				
Y	3 in.	D60i	no volt	2-Button Interlock	E	200 L (55 Gal)	DR	Aluminum	Neoprene (small)				

Key:

S = Single ram cylinder s = 6.5 inch ram cylinder F = Flat 200 = 200L (55 gal) SW = Single wiper
D = Dual ram cylinder i = 2-Button Interlock D = D Style 60 = 60L (16 gal) DW = Double wiper
L = Lift only c = Cart mount DR = Dual o-ring 20 = 20L (5 gal) or 30L INT = Integrated air controls (8 gal)
CS = Carbon Steel SST = Stainless Steel

Part Number	Description
262868	Similar to CM-__-3-B models (such as CM-11-3-B), but uses Check-Mate Pump P40DCS (NXT2200/CM 100) instead of the other pumps listed in Table 1/table 2
2001979	Similar to CM-2L-5-A, but has a black color

Pump Identification

See the Check-Mate, Dura-Flo, or NXT Pump Packages Instruction-Parts manual or the ID plate on the pump to determine the pump part number.

The pump identification code listed in each table represents the air motor series, nominal air motor size (cc), pump series, pump displacement (cc), and pump material of construction. For example, **NXT 2200/DF 154 SS** represents a 2200 cc (**2200**) NXT Air Motor (**NXT**), with a 154 cc (**154**) stainless steel (**SS**) Dura-Flo (**DF**) pump.

- Air Motor Series Options: NXT or Xtreme XL
- Pump Series Options: Check Mate (CM) or Dura-Flo (DF)
- Pump Materials of Construction: Carbon steel (CS) or Stainless steel (SS)

NOTE: For further breakdown of the pump and drive configuration for a specific pump code, refer to the manual listed at the top of the column containing the six digit pump part number in Table 1 and Table 2.

Table 1: Dura-Flo Pump Identification Code/Part No. Index










Pump Code	Pump Part (see manual 311828)	Pump Code	Pump Part (see manual 311826)	Pump Code	Pump Part (see manual 311826)	Pump Code	Pump Part (see manual 311833)
NXT 2200/DF 145SS		NXT 3400/DF 430SS		NXT 6500/DF 580CS		NXT 6500/DF 1000CS	
A1	P31LSS	E5	P15LSS	F9	P22LCS	G9	P10LCS
NXT 3400/DF 145SS		E6	P15LSM	NXT 6500/DF 580SS			
B1	P46LSS	NXT 6500/DF 430SS		FF	P22LSS		
NXT 3400/DF 180SS		EF	P32LSS	FG	P22LSM		
B5	P41LSS	EG	P32LSM	Xtreme XL/DF 580CS			
NXT 3400/DF 220SS		Xtreme XL/DF 430		FL	P35LSS		
C1	P30LSS	EL	P47LSS	FM	P35LSM		
NXT 6500/DF 220SS		EM	P47LSM	FT	P35LCS		
CA	P57LSS	ES	P47LCM				
Xtreme XL/DF 290SS		ET	P47LCS				
DL	P71LSS	NXT 3400/DF 580SS					
		F5	P12LSS				
		F6	P12LSM				

Table 2: Check-Mate Pump Identification Code/Part No. Index

Pump Code	Pump Part (see manual 312376)	Pump Code	Pump Part (see manual 312376)	Pump Code	Pump Part (see manual 312376)	Pump Code	Pump Part (see manual 312376)
NXT 200/CM 60		NXT 1800/CM 60		NXT 2200/CM 200		NXT 6500/CM 250	
4A	P05LCS	9A	P61LCS	21	P23LCS	39	P55LCS
4B	P05LCM	9B	P61LCM	22	P23LCM	3A	P55LCM
4C	P05LSS	9C	P61LSS	2K	P23LCE	3B	P55RCS
4F	P05LSM	9F	P61LSM	23	P23RCS	3C	P55RCM
NXT 400/CM 60		9G	P61RCS	24	P23RCM	3F	P55LSS
6A	P11LCS	9H	P61RCM	25	P23LSS	3G	P55LSM
6B	P11LCM	9J	P61RSS	26	P23LSM	3H	P55RSS
6C	P11LSS	9K	P61RSM	27	P23RSS	3J	P55RSM
6F	P11LSM	91	P61SCS	28	P23RSM	Xtreme XL/CM 250	
6G	P11RCS	92	P61SCM	NXT 3400/CM 200		3L	P85LCS
6H	P11RCM	93	P61SSS	29	P36LCS	3M	P85LCM
6J	P11RSS	94	P61SSM	2A	P36LCM	3R	P85LSS
6K	P11RSM	NXT 2200/CM 100		2D	P36LCE	3S	P85LSM
61	P11SCS	11	P40LCS	2B	P36RCS	NXT 3400/CM 500	
62	P11SCM	12	P40LCM	2C	P36RCM	51	P14LCS
63	P11SSS	1D	P40LCE	2F	P36LSS	52	P14LCM
64	P11SSM	1F	P40LSS	2G	P36LSM	53	P14RCS
NXT 700/CM 60		1G	P40LSM	2H	P36RSS	54	P14RCM
7A	P20LCS	13	P40RCS	2J	P36RSM	55	P14LSS
7B	P20LCM	14	P40RCM	NXT 6500/CM 200		56	P14LSM
7C	P20LSS	1H	P40RSS	2L	P68LCS	57	P14RSS
7F	P20LSM	1J	P40RSM	2M	P68LCM	58	P14RSM
7G	P20RCS	10	P40SSS	2R	P68RCS	NXT 6500/CM 500	
7H	P20RCM	1A	P40SSM	2S	P68RCM	59	P26LCS
7J	P20RSS	19	P40SCS	2T	P68LSS	5A	P26LCM
7K	P20RSM	NXT 3400/CM 100		2U	P68LSM	5B	P26RCS
71	P20SCS	15	P63LCS	2W	P68RSS	5C	P26RCM
72	P20SCM	16	P63LCM	2Y	P68RSM	5F	P26LSS
73	P20SSS	1T	P63LSS	20	P68SCS	5G	P26LSM
74	P20SSM	1U	P63LSM	NXT 3400/CM 250		5H	P26RSS
NXT 1200/CM 60		17	P63RCS	31	P29LCS	5J	P26RSM
8A	P38LCS	18	P63RCM	32	P29LCM	Xtreme XL/CM 500	
8B	P38LCM	1W	P63RSS	33	P29RCS	5L	P42LCS
8C	P38LSS	1Y	P63RSM	34	P29RCM	5M	P42LCM
8F	P38LSM	1B	P63SSS	35	P29LSS	5R	P42LSS
8G	P38RCS	1C	P63SSM	36	P29LSM	5S	P42LSM
8H	P38RCM	NXT 2200/CM 200		37	P29RSS	No Pump	
8J	P38RSS	NXT 1800/CM 60		38	P29RSM	NN	---
8K	P38RSM	NXT 400/CM 60					
81	P38SCS	NXT 700/CM 60					
82	P38SCM	NXT 1200/CM 60					
83	P38SSS	NXT 200/CM 60					
84	P38SSM	NXT 400/CM 60					

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.

 <h2 style="margin: 0;">WARNING</h2>	
    	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> Do not point dispensing device at anyone or at any part of the body. Do not put your hand over the fluid outlet. Do not stop or deflect leaks with your hand, body, glove, or rag. Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. Tighten all fluid connections before operating the equipment. Check hoses and couplings daily. Replace worn or damaged parts immediately.
  	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> Keep clear of moving parts. Keep your hands away from the follower plate and the lip of the drum while the ram is operating. Keep your hands away from the ram frame while the ram is operating. Do not operate equipment with protective guards or covers removed. Equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.

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 dispense valve 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.



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 Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) 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. 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.






ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.



- Turn off and disconnect power cord before servicing equipment.
- Connect only to grounded electrical outlets.
- Use only 3-wire extension cords.
- Ensure ground prongs are intact on power and extension cords.
- Do not expose to rain. Store indoors.

WARNING

	<p>SPLATTER HAZARD</p> <p>Hot or toxic fluid can cause serious injury if splashed in the eyes or on skin. During blow off of platen, splatter may occur.</p> <ul style="list-style-type: none"> • Use minimum air pressure when removing platen from drum.
	<p>TOXIC FLUID OR FUMES HAZARD</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"> • Read Safety Data Sheets (SDSs) 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.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>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:</p> <ul style="list-style-type: none"> • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Component Identification

D200 3 in. and D200s 6.5 in. Dual Post

Model CM14BA Shown

(Note: Do not use the air motor lift ring to lift the entire system.)

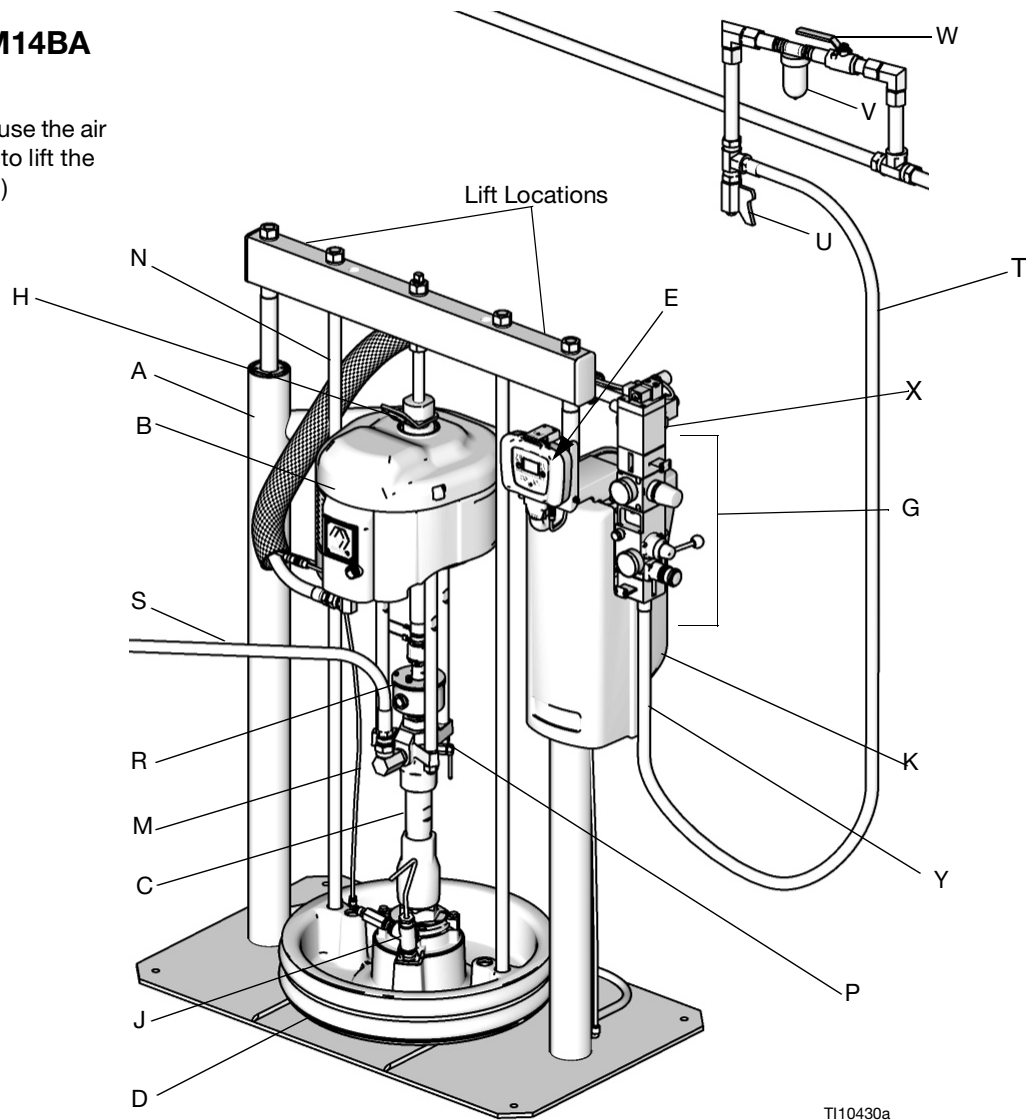


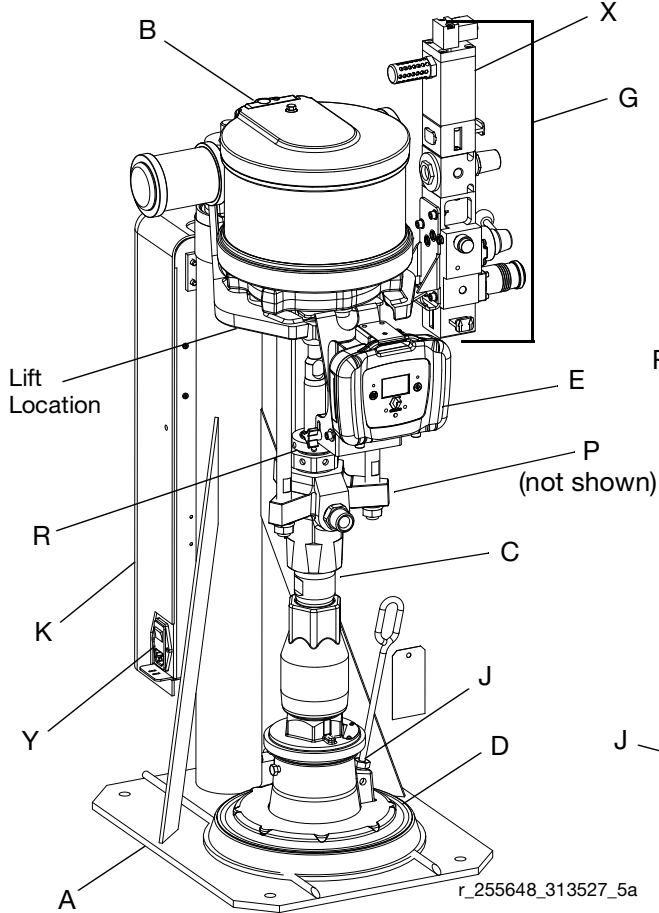
FIG. 1: Typical Installation

Key:

A	Ram Assembly	N	Platen Lift Rod
B	Air Motor	P	Pump Bleed Valve
C	Displacement Pump	R	Enclosed Wet Cup
D	Platen	S	Fluid Line (not supplied)
E	Remote DataTrak (single ram systems) or Display Module (tandem systems)	T	Main Air Line (not supplied)
G	Integrated Air Controls (see FIG. 3)	U	Air Line Drain Valve (not supplied)
H	Air Motor Lift Ring	V	Air Filter (not supplied)
J	Platen Bleed Port	W	Bleed Type Air Shutoff Valve (not supplied)
K	Power Supply Box	X	Air Motor Solenoid
M	Blowoff Air Supply Line	Y	Power Switch/Power Cord Connection (on back side of cover)

S20 3 in. Single Post and D60 3 in. Dual Post

Model CM9HLB Shown



Model CM2MRY Shown

(Note: Do not use the air motor lift ring to lift the entire system.)

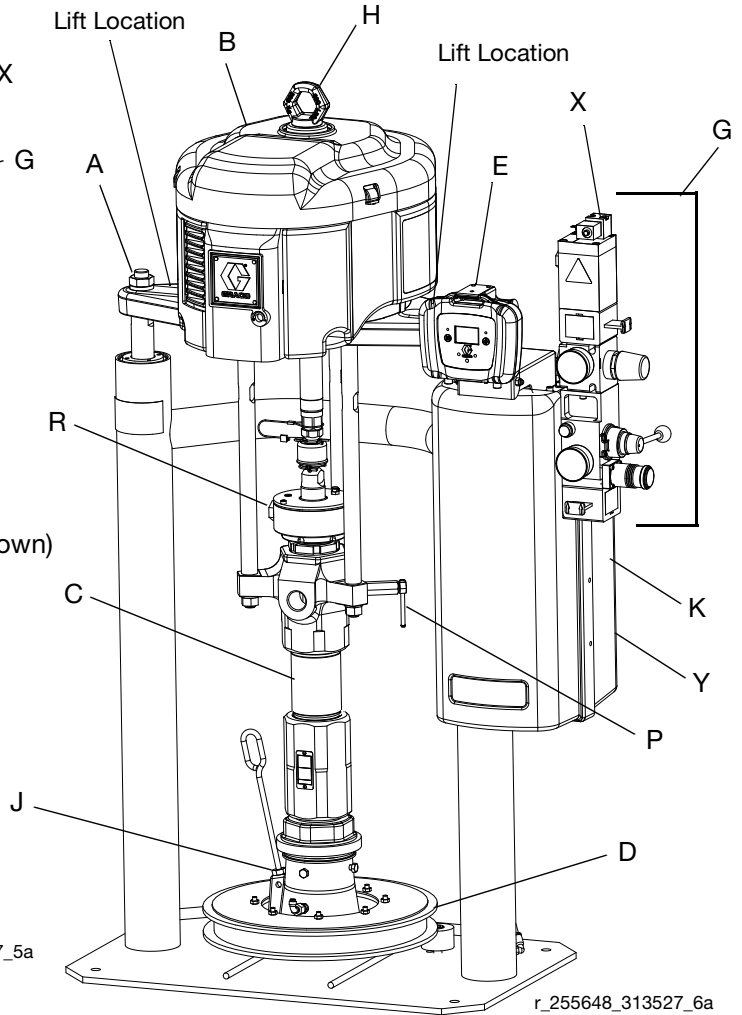


FIG. 2: Typical Installation

- Key:**
- | | | | |
|---|---|---|--|
| A | Ram Assembly | S | Fluid Line (not shown or supplied, see FIG. 1) |
| B | Air Motor | T | Main Air Line (not shown or supplied, see FIG. 1) |
| C | Displacement Pump | U | Air Line Drain Valve (not shown or supplied, see FIG. 1) |
| D | Platen | V | Air Filter (not shown or supplied, see FIG. 1) |
| E | Remote DataTrak (single ram systems) or Display Module (tandem systems) | W | Bleed Type Air Shutoff Valve (not shown or supplied, see FIG. 1) |
| G | Integrated Air Controls (see FIG. 3) | X | Air Motor Solenoid (Data Trak Models) |
| H | Air Motor Lift Ring | Y | Power Switch/Power Cord Connection (on back side of cover) |
| J | Platen Bleed Port | | |
| K | Power Supply Box (under shrouding) | | |
| P | Pump Bleed Valve | | |
| R | Enclosed Wet Cup | | |



Integrated Air Controls (G)

See **Basic Supply System Operating Controls** on page 19 for more information on the Integrated Air Controls, which include:

- **Main air slider valve (BA):** turns air on and off to the supply system. When closed, the valve relieves pressure downstream.
- **Ram air regulator and gauge (BB):** controls ram up and down pressure and blowoff pressure.
- **Ram director valve (BC):** raises and lowers the ram.
- **Exhaust port with muffler (BD)**
- **Air motor regulator and gauge (BE):** Controls air pressure to motor.
- **Blowoff button (BG):** turns air on and off to push the platen out of an empty drum.
- **Air motor slider valve (BF):** turns air on and off to the air motor. When in the off position, the valve relieves air trapped between it and the air motor.

Remote DataTrak: The air motor solenoid (X, FIG. 1), the air motor slider valve (BF), and the main air slider valve (BA) must be open for air to flow. (See **Remote DataTrak Setup**, page 27.)

NOTE: Each slider valve (BA, BF) is labeled to indicate the opened and closed position of the valve. The

 icon represents the opened position, and the  icon represents the closed position. Both slider valves are shown in the opened position in FIG. 3.

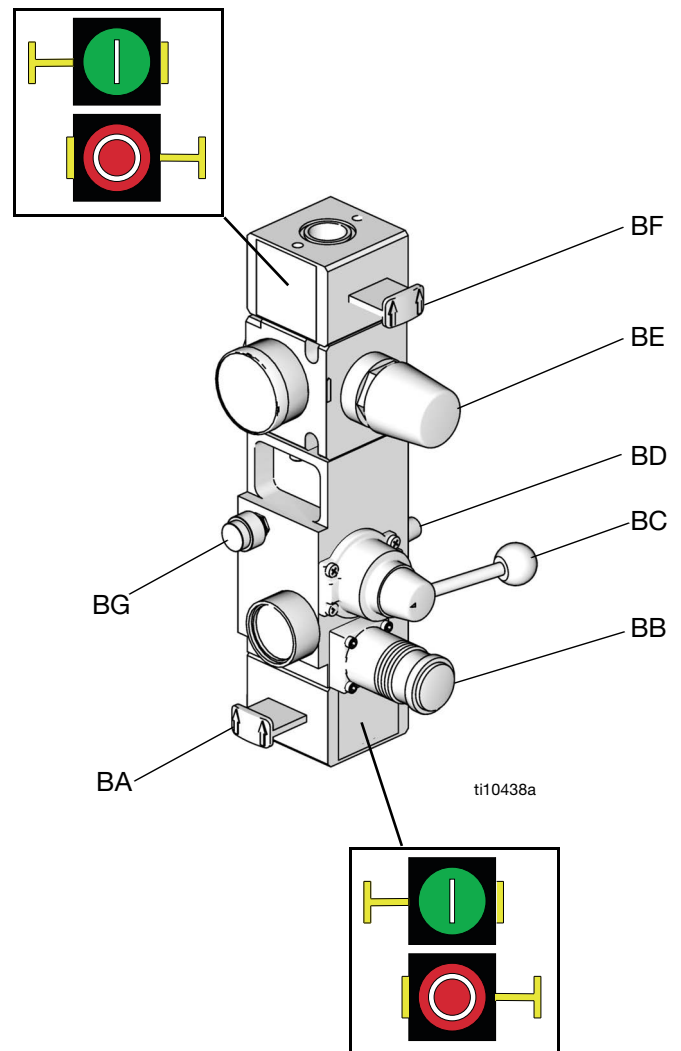


FIG. 3

Air Line Accessories

See FIG. 1.

- **Air line drain valve (U):** Not supplied
- **Air filter (V):** removes harmful dirt and moisture from compressed air supply. Not supplied.
- **Bleed-type air shutoff valve (W) (required):** isolates air line accessories and supply system for servicing. Locate upstream from all other air line accessories. Not supplied.

2-Button Interlock Air Controls Accessory

The two button interlock accessory requires the operator to use both hands to raise, or lower the ram while the platen is outside the drum.

D60i, D200i, and D200si Models

Units that have 2-Button Interlock controls have the following additional components:

- **2-Button Module:** See Air Controls Instructions-Parts manual for installation information.

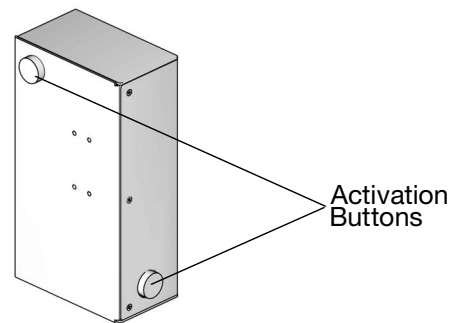


FIG. 4

- **Roller switch (CA):** shuts off air supply when it contacts the bracket actuator. Operator must push and hold the activation buttons simultaneously to resume ram movement.
- **Bracket actuator (CB):** attaches to the platen lift rod. When platen is outside of drum, actuator makes contact with the roller switch.

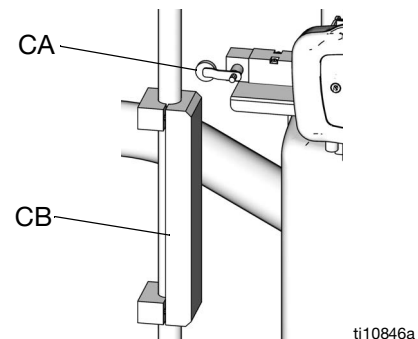


FIG. 5

Installation

General Information

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

Accessories are available from Graco. Make certain all accessories are adequately sized and pressure-rated to meet the system's requirements.

FIG. 1 and FIG. 2 are only guides for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

Location

NOTICE

Always lift the supply system at the proper lift locations (see FIG. 1 and FIG. 2). Do **not** lift in any other way. Failure to lift at the proper lift locations can result in damage to the supply system.

1. Attach a lifting sling at the proper lift spots (see FIG. 1 and FIG. 2). Lift off of the pallet using a crane or a forklift. See **Weight** on page 40.
2. Position the ram so the air controls are easily accessible. Ensure that there is enough space overhead for the ram to raise fully. See **Dimensions** on page 39.
3. Using the holes in the ram base as a guide, drill holes for 1/2 in. (13 mm) anchors.
4. Ensure that the ram base is level in all directions. If necessary, level the base using metal shims. Secure the base to the floor using 1/2 in. (13 mm) anchors that are long enough to prevent the ram from tipping.

Grounding



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

Pump: use a ground wire and clamp. Loosen grounding lug locknut and washer. Insert one end of supplied ground wire into slot in lug and tighten locknut securely. Connect other end of wire to a true earth ground. See FIG. 6.

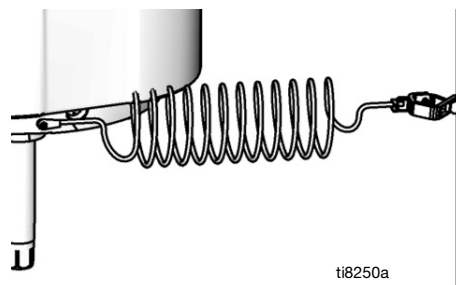


FIG. 6

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 electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.

Air compressor: follow manufacturer's recommendations.

Dispense valve: ground through 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 dispense valve firmly to the side of a grounded metal pail, then trigger the valve.

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 your pump manual for flushing instructions.

Mechanical Setup

1. Fill displacement pump wet cup (R) 1/3 full with Graco Throat Seal Liquid (TSL).
2. Back-off air regulators to their full counterclockwise position and close all shutoff valves.
3. Connect air line from an air source to the system air inlet. See FIG. 1 and FIG. 2. Refer to the pump performance curves in the Check-Mate Pump Packages Instructions-Parts manual to determine your air supply flow requirements. Use a supply hose capable of meeting the required flow.



NOTE: Quick disconnects restrict flow for large air motors.

NOTE: Air Line Accessories on page 14 are recommended for all installations.

4. Connect the pump outlet fittings and the fluid line (not supplied).

NOTE: Make sure all components are adequately sized and pressure rated to meet the system requirements.

Connect Remote DataTrak to Power (Optional)

				
Have a trained electrician install and inspect power connection per local code.				

NOTE: Install the remote DataTrak as described in the **Remote DataTrak Setup** section on page 27.

100-240 Vac

The system has an IEC-C14 power input connection located on the back of the power supply box (K). The user must supply an appropriate adapter. The 100-240 Vac supply must be capable of sourcing at least 1.2 Amps and have supply current protection rated in accordance with the supply wire gauge provided.

Power Requirements:

Frequency	Voltage	Max. Current	Phase
50-60 Hz	100-240 Vac	1.2 Amps	1

Have a trained electrician install and inspect power connection per local code. Plug power supply cord into the outlet on the back of the power supply box (H) and into a properly grounded electrical outlet. Use a zip tie, if needed, to secure power cord in place.

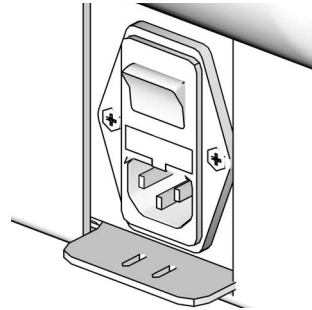


FIG. 7

24 Vdc

Attach a 24V Class 2 power supply to terminals on the 24V assembly: +24 Vdc to terminal 2 (+) and -24 Vdc to terminal 5 (-). Attach protective earthing (PE) conductor to terminal marked \perp .

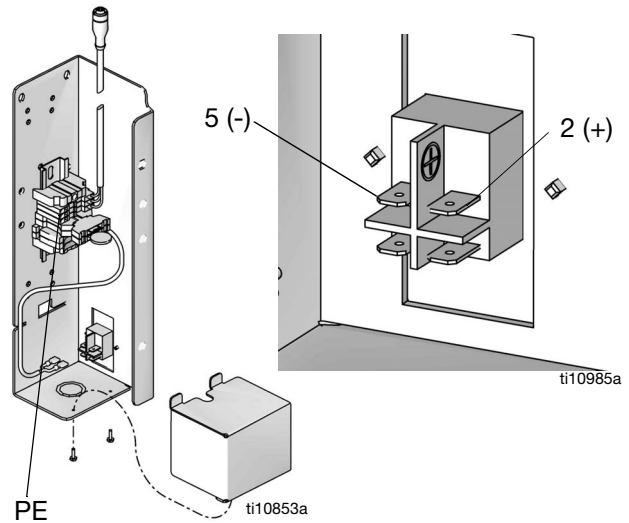


FIG. 8

The 24 Vdc supply must be capable of supplying at least 1.2 Amps and have supply current protection rated at no more than 2.5 Amps.

Power Requirements:

Voltage	Max. Current
24 Vdc	1.2 Amps

Attach and Adjust Drum Low/Empty Sensor (Optional)

NOTE: The low/empty level sensor can only be used on supply systems with a remote DataTrak.

For supply systems with remote DataTrak, an optional kit can be purchased to indicate either when the drum is low or when it is empty. See the table below for optional kits that can be purchased for available models:

Kit	Models
255649	D60, D60i, D200, and D200i
255689	D200s, D200si
257634	S20

1. Make sure the ram is in the fully lowered position (as shipped).
2. Attach low/empty sensor bracket (EA) to mounting bracket (EB).

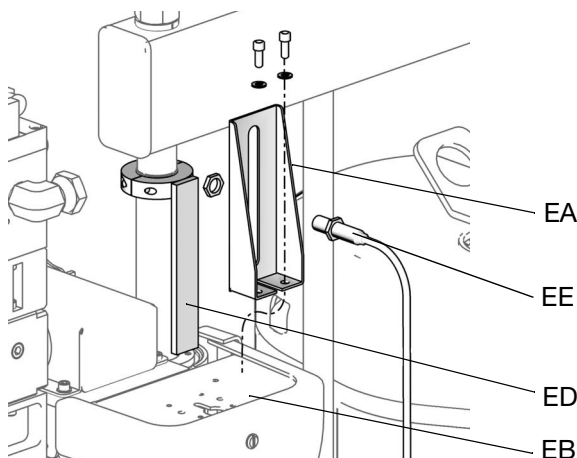


FIG. 9

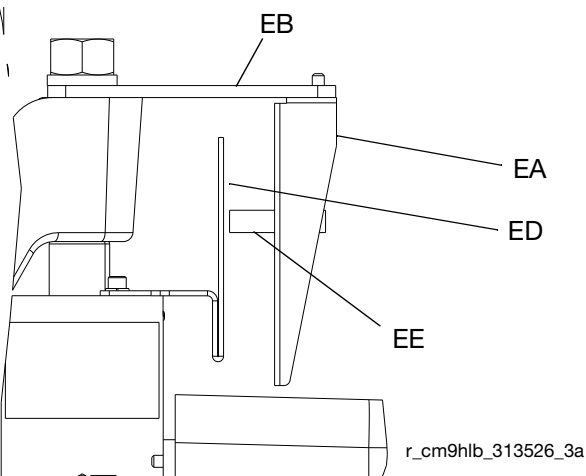


FIG. 10

3. To measure either drum low or drum empty, attach one sensor (EE) to the sensor bracket (EA).
4. Attach the actuator (ED):
 - a. For D200, D200s, D200si and D200i supply systems: Attach the actuator (ED) to the ram piston rod, near the top, so it passes in front of the sensor (EE) at the correct level for drum low or drum empty. See FIG. 9.
 - b. For D60 and D60i supply systems: Attach the actuator (ED) to the ram piston rod, near the top, so it passes in front of the sensor (EE) at the correct level for drum low or drum empty. Flip actuator bracket (ED) so that it points upwards instead of downwards to allow it to pass the sensor (EE). See FIG. 9.
 - c. For S20 supply systems: Attach the actuator (ED) to the ram cylinder endcap, so the sensor (EE) passes in front of the bracket (ED) at the correct level for drum low or drum empty. See FIG. 10.
5. Make precise adjustments by moving the sensor within the slot on the sensor bracket.
6. Attach the sensor to the corresponding connector on the D-Sub harness of the remote DataTrak.

Light Tower Accessory

Order the 255467 Light Tower Accessory as a diagnostic indicator for D200s, D200, D60, and S20 supply systems. See Table 3: for a description of light tower signals. See the Light Tower Kit Instruction manual for installation instructions.

Table 3: Light Tower Signals

Signal	Description
Yellow flashing	A low priority error exists.
Yellow on	A medium priority error exists.
Red flashing	A high priority error exists.
Red on	The system is shut down due to error conditions.

Attach Drum Stops

Only D200s, D200, and D60 Supply systems are shipped with drum stops in place to help position the drum on the ram. For replacement parts, order Kit 255477. The kit includes two each of capscrews (FA), lock washers (not shown), and drum stops (FB).

1. Locate the correct set of mounting holes on the ram base.
2. Using the capscrews (FA) and lock washers (not shown), attach the drum stops (FB) to the ram base.

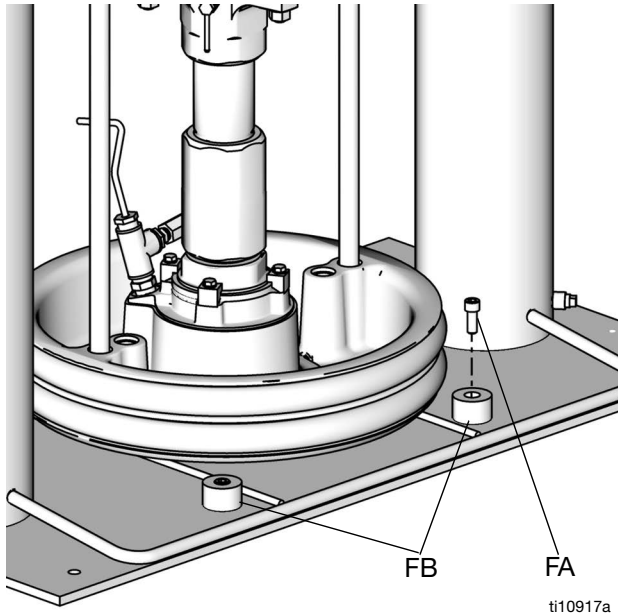


FIG. 11

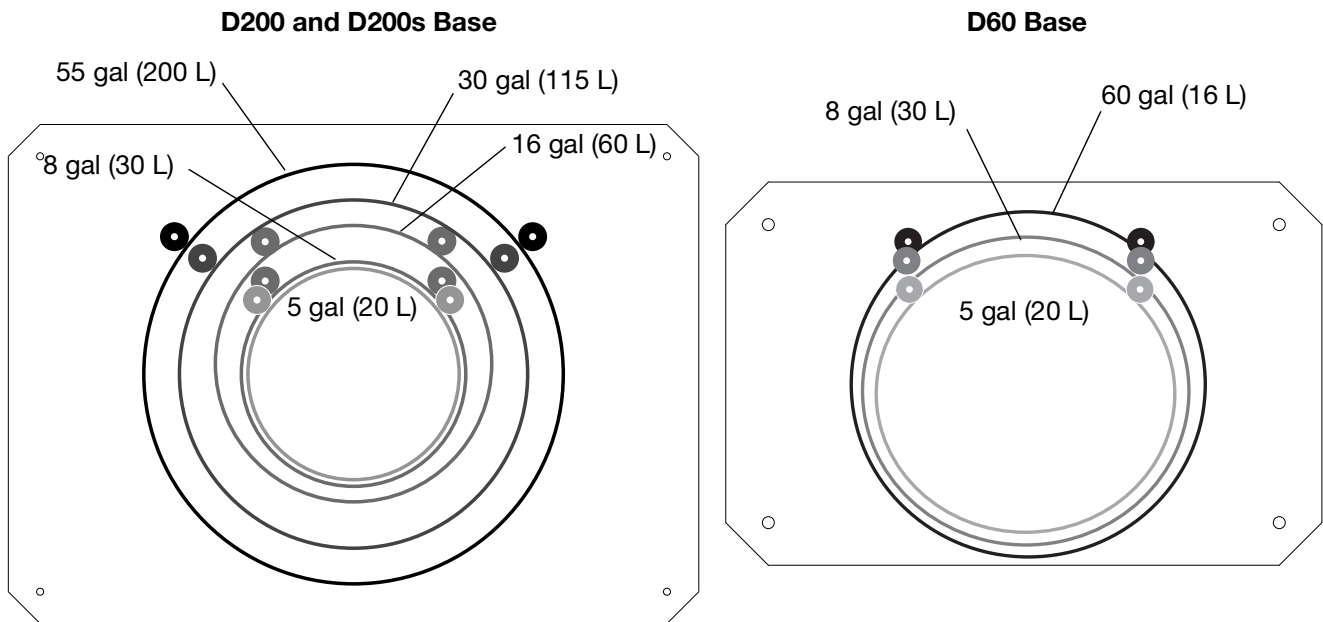


FIG. 12

Supply System Overview

Basic Supply System Operating Controls

Review and understand the following descriptions of the integrated air controls before operating the equipment. See **Integrated Air Controls (G)** on page 13.

Main Air Slider Valve (BA)

The main air slider valve (BA) turns air on and off to the supply system. When closed, the valve relieves pressure to the air motor (B). Accumulated pressure in the ram cylinders will remain unless the ram director valve (BC) is toggled between the UP and DOWN positions. See **Ram Director Valve (BC) and Ram Air Regulator (BB)** section below.

Air Motor Slider Valve (BF)

The air motor slider valve (BF) turns air on and off to the air motor (B). When closed, the valve relieves pressure to the air motor so the pump will not operate. Both the main air slider valve (BA) and the air motor slider valve (BF) must be open for the pump to operate.

Ram Director Valve (BC) and Ram Air Regulator (BB)



The ram may raise or lower in sudden, jerky, start and stop movements. Keep clear of all moving parts. To prevent serious injury, do not put hands or other body parts under the platen where they can be crushed, pinched or amputated.

The ram director valve (BC) is used to raise and lower the ram. Moving the director valve handle to UP will raise the ram, and moving the director valve handle to DOWN will lower the ram. Moving the director valve handle to the neutral position, centered between the UP and DOWN positions, will stop any up/down movement of the ram. The speed the ram raises or lowers can be throttled by moving the ram director valve to a position between the neutral and the up or down position. This can be useful to slow ram movement when aligning a new drum. or removing an empty drum.

Air Motor Regulator (BE)

Air pressure to the air motor (B) can be adjusted and viewed using the air motor regulator (BE) and gauge. Pull the knob cap to unlock the air motor regulator (BE) and allow rotation, and push the knob cap back in to lock the air motor regulator (BE) and prevent rotation. Rotate the knob counterclockwise to decrease pressure to the air motor and decrease flow from the pump. Rotate the knob clockwise to increase the pressure to the air motor and increase flow from the pump.

Blowoff Button (BG)



Blowoff air will vent between the platen (D) and the drum when the platen exits the drum, causing noise and potential material splatter. Wear appropriate protective equipment to help prevent serious injury from potential material splatter when the platen exits the drum.


The supply system uses the ram cylinders to lift the displacement pump (C) and platen (D). Blowoff air is used to push the material drum off of the platen as the ram rises.







Pressing the blowoff button (BG) forces air between the drum and platen (D) to push the drum off the platen. Without blowoff air, the platen (D) will remain in the drum when raising the ram, causing the drum to lift off of the ram base. When the ram director valve (BC) is moved to the UP position, pressing the blowoff button (BG) will force air under the platen to push the drum off of the platen and maintain contact between the drum and the ram base as the ram is raised. It is necessary to coordinate the rate that the ram lifts with the rate that the blowoff air pushes the drum off of the platen to keep the drum in contact with the ram base. Keeping the drum close to or in contact with the base of the ram will ensure the drum stays upright and does not tilt on the platen. In order to keep the platen moving upwards, and also pushing out of the drum, the blowoff button (BG) needs to be pulsed, as explained in the **Drum Change Procedure** on page 25.

The ram director valve (BC) must be at least halfway between the NEUTRAL and UP position for blowoff air to pass. The lifting speed of the ram can be increased by moving the ram director valve (BC) closer to the full UP position, and decreased by moving the ram director valve (BC) closer to the neutral position. A hissing sound can usually be heard in the drum when blowoff air is passing.

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 dispensing and before cleaning, checking, or servicing the equipment.

NOTE: To relieve pressure for the entire Supply System, follow steps 1 through 12. To relieve pressure for the fluid side only, leave air on to the ram cylinder and follow steps 1 through 10.

Fluid Pressure Relief

The following steps relieve fluid pressure in the pump, material hoses, and dispense valve.

1. Make sure the dispense valve is closed.
2. Close the air motor slider valve (BF).
3. Hold a metal part of the dispense valve firmly to the side of a grounded metal pail.
4. Disengage the dispense valve trigger lock if applicable.
5. Trigger the dispense valve to open and relieve pressure.
6. Close the dispense valve and engage the trigger lock if applicable.
7. Open the fluid line drain valve and the pump bleed valve (P). Have a container ready to catch the drainage.

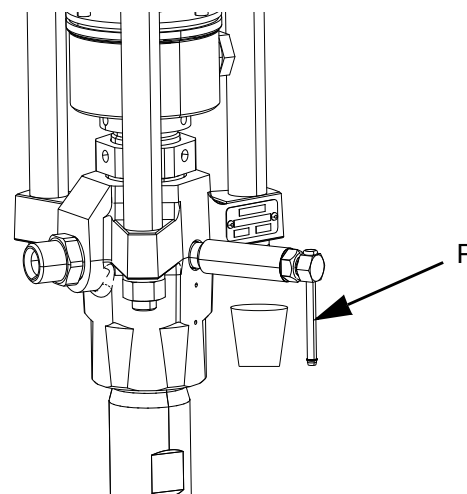




FIG. 13

				
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Leaving the pump bleed valve (P) open when starting the pump could cause unexpected material spray. To prevent serious injury from splashing fluid, close the pump bleed valve before starting the pump.

8. Leave the pump bleed valve (P) open until ready to dispense again.
9. If you suspect the dispense valve or hose is clogged or that pressure has not been fully relieved:
 - a. VERY SLOWLY loosen the valve outlet fittings or the hose end coupling(s) to relieve pressure gradually. Refer to the appropriate manual for specific dispense valve instructions. See **Related Manuals** on page 3.
 - b. Remove the valve outlet fittings or the hose end coupling(s) completely.
 - c. Clear the obstruction in the dispense valve or hose.
 - d. Reassemble and tighten the valve outlet fittings or the hose end coupling(s).
10. Close the main air slider valve (BA).

Ram Pressure Relief



The ram may raise or lower in sudden, jerky, start and stop movements. Keep clear of all moving parts. To prevent serious injury, do not put hands or other body parts under the platen where they can be crushed, pinched or amputated.

The following steps relieve pressure to the ram cylinders that lift and lower the ram.

11. Set the ram director valve (BC) to DOWN. You will hear air pressure bleeding off, and the ram will slowly drop, unless the platen is in a drum.
12. Toggle the ram director valve (BC) between the up and down positions. When you no longer hear air bleeding off in the up or down positions, depressurization is complete.

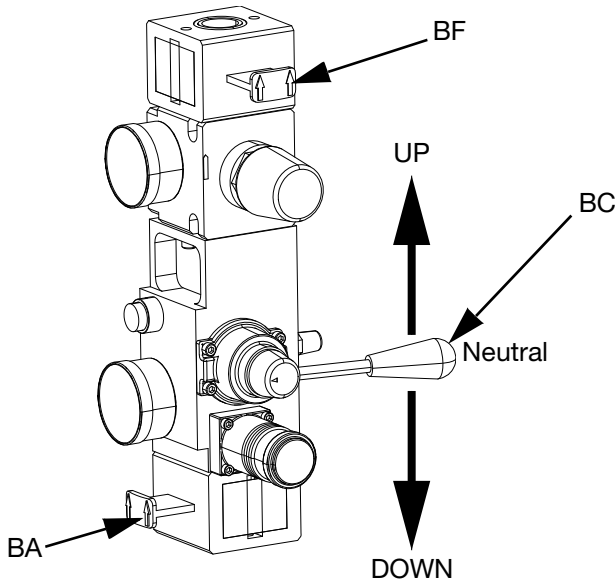


FIG. 14

Start and Adjust Ram

Load Drums

This procedure is for loading a material drum on an empty ram base. If a drum has already been installed, see **Change Drums** on page 25.

NOTE: This procedure refers to the material container as a drum. The same process applies to loading either a drum or a pail.

Moving parts can pinch or amputate fingers. When the pump is operating, and when raising or lowering the ram, keep fingers and hands away from the priming piston/pump inlet, platen (D), and lip of the drum.

The ram assembly is prone to sudden movements due to varying drive and frictional forces.

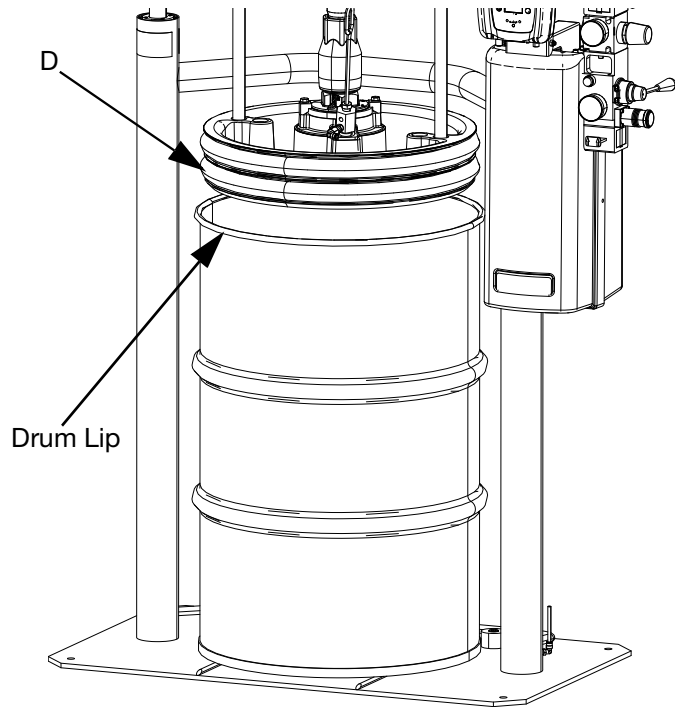


FIG. 15: Platen and Drum Lip

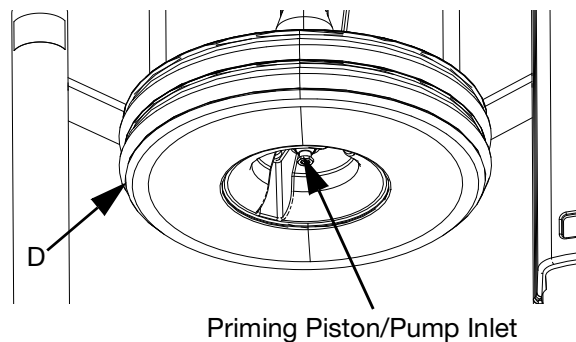


FIG. 16: Pump Inlet

1. Close the air motor slider valve (BF) and the main air slider valve (BA).
2. Set the ram director valve (BC) to the neutral position.

3. Close the ram air regulator (BB) and the air motor regulator (BE) by fully turning the regulator knobs counterclockwise.
 4. Open the main air slider valve (BA).
 5. The air motor and ram pressure gauges should read zero when the regulators (BB, BE) are closed and the main air is on.
 6. Set the ram air regulator (BB) to 40 psi (0.28 MPa, 2.8 bar).
 7. Set the ram director valve handle (BC) to UP and let the ram rise to its full height. **2-Button Interlock:** If the system has this feature, the ram will stop as it nears the top. Press and hold both buttons to raise the ram completely. See FIG. 4 on page 14.
 8. Inspect platen seals (D) for damage and lubricate with grease or other lubricant compatible with the fluid to be pumped. See FIG. 17 and FIG. 18.
 9. Remove the drum cover and inspect the material for contamination and ensure the top surface of the material is level. Smooth the surface of the fluid with a straightedge if necessary.
 10. If the drum has a plastic liner, pull it over edge of the drum. Secure the liner with tape wrapped around the circumference of the drum.
 11. Replace the drum cover before moving the drum to prevent possible spillage.
 12. Put a full drum of material on the ram base, slide it back against the drum stops, and center it under the platen (D). Drum styles vary, so the drum may not be perfectly centered when positioned against the drum stops. An optional drum roller kit is available for D200 and D200s supply systems to make it easier to load the drum on the base. Order Kit 255627.
- NOTE:** Single post ram models beginning with the letter S do not include drum stops and must be manually centered under the platen.
13. Remove the drum cover.
 14. Remove bleed stick from platen bleed port (J).

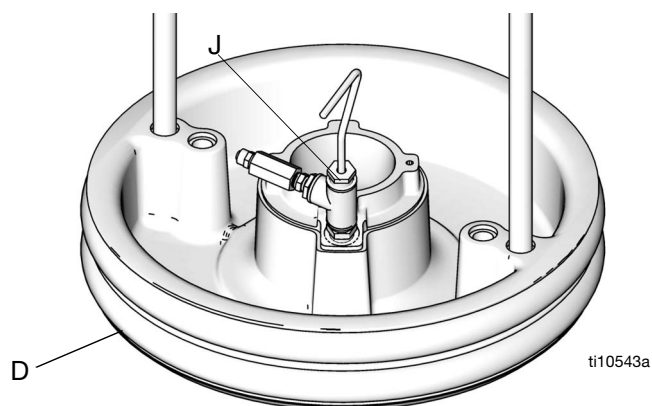


FIG. 17: D200 and D200s 6.5 in. Dual Post

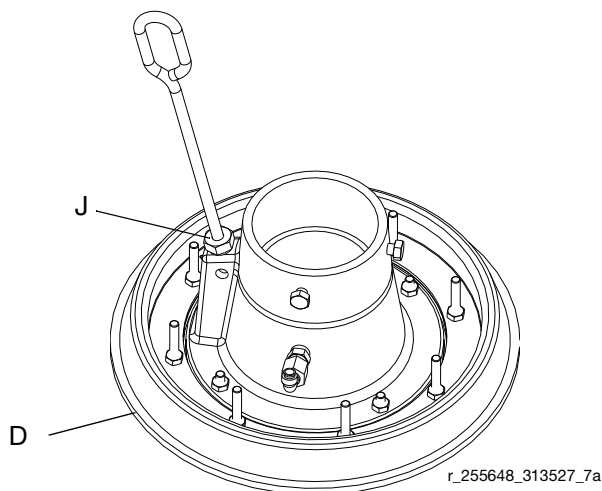


FIG. 18: S20 and D60 3 in. Single Post

<p>A combination of compressed air and material from the drum can spray from the bleed port at high velocity when the platen is plunged into the material drum. Wear appropriate protective equipment when in the work area to help prevent serious injury from splashing fluid.</p>				

NOTICE
<p>To prevent damage to platen seals, do not use a drum that is dented or damaged.</p>

15. Set the ram director valve (BC) to DOWN and lower the ram until the platen (D) is just above the top of the drum, then set the ram director valve (BC) to neutral.

16. Verify the platen (D) and material drum are properly aligned. Adjust the position of the drum if necessary.
17. Set the director valve (BC) to DOWN and lower the ram until fluid appears at the top of the platen bleed port (J). Adjust ram air regulator (BB) as needed for material to flow out of the bleed port (J). **2-Button Interlock:** If the system has this feature, press and hold both buttons to start lowering the ram. See FIG. 4 on page 14.
18. Set the director valve (BC) to neutral, reinsert the bleed stick into the bleed port (J), and tighten securely.

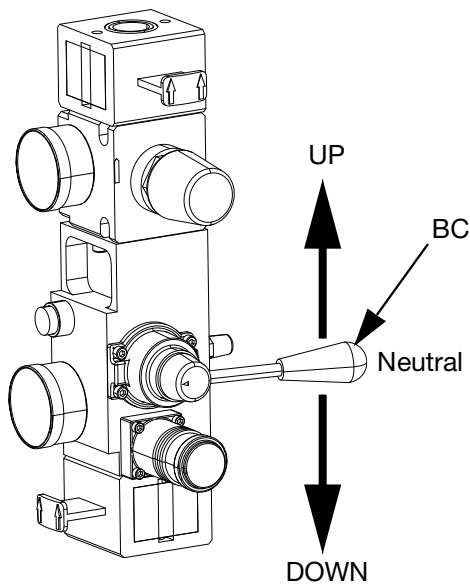


FIG. 19

Start and Adjust Pump

Keep hands and fingers away from the priming piston/pump inlet, located on the bottom of the platen, during operation and whenever the pump is pressurized with air. Follow the Pressure Relief Procedure before checking, clearing, or priming the pump.

This manual only covers generic instructions for starting and adjusting the pump as part of the complete supply system. See your specific pump instruction manual for

model specific instructions, care of the pump, preventative maintenance, troubleshooting, and accessory equipment. See **Related Manuals** on page 3.

1. Follow the **Load Drums** procedure on page 22.
2. Check the fluid level in the wet cup (R). Maintain a fluid level of 1/3 full.
3. Turn the air motor regulator (BE) fully counterclockwise until the gauge reads zero to relieve air pressure to the motor.
4. Be sure the air motor slider valve (BF) is closed.
5. Set the ram director valve (BC) to DOWN.

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To reduce the risk of skin injection, do not use your hand or fingers to cover the bleed hole in the underside of the pump bleed valve (P) when priming the pump. Use the handle or a crescent wrench to open and close the pump bleed valve.

6. Set the ram air regulator (BB) to a minimum of 40 psi (0.28 MPa, 2.8 bar).
7. Inspect the platen seal around the perimeter of the drum periodically for leakage. If leakage is present, reduce the ram air pressure.
8. Open the pump bleed valve (P) and place a container under the valve.

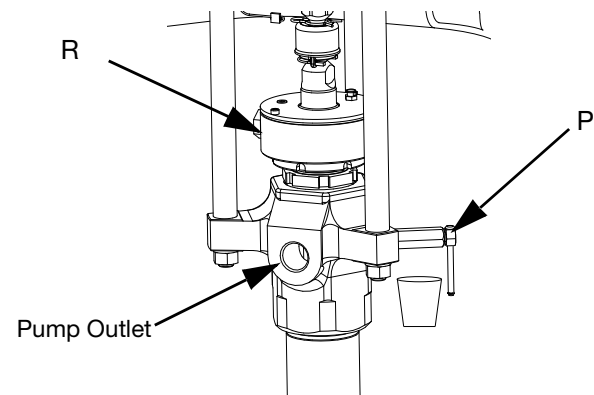





FIG. 20

9. Open the air motor slider valve (BF) to allow the pump to start.

10. Gradually turn the air motor regulator (BE) clockwise until the pump begins to cycle.
11. Allow material to flow into the cup until there is a smooth flow with no snapping or popping caused by trapped air.
12. Close the air motor slider valve (BF) to stop the pump.
13. Close the pump bleed valve (P).

Purge Air From the Dispense Hose and Dispense Valve

				
Initial fluid flow from the hose or dispense head can splatter significantly until all air is purged from the wetted components. Wear appropriate protective equipment when in the work area and direct the fluid outlet into a container before triggering to help prevent serious injury from splashing fluid.				

Perform steps 14-19 only when priming new hoses, or after replacing/maintaining wetted components between the pump and dispense valve. These steps describe priming from the dispense valve. If wetted components have been cleaned or replaced, purge from the new/clean components, then reconnect and prime at the dispense valve. This reduces the possibility of pushing air through components that have already been primed.

14. Hold a metal part of the dispense valve firmly to the side of a grounded metal pail to collect dispensed material.
15. Trigger the dispense valve and hold it open.
16. Open the air motor slider valve (BF) to start the pump.
17. Allow material to flow into the cup until there is a smooth flow with no snapping or popping caused by trapped air.

NOTE: For unprimed hoses, it may take a few minutes for material to fill the hoses and reach the dispense head.

18. Close the dispense valve to stop material flow.
Remote DataTrak: If the system has this feature,





press the prime/flush key (PF). See **Remote DataTrak Controls and Indicators** on page 28.

19. Make sure the ram director valve (BC) is in the DOWN position while the pump is operating.

NOTE: Increase the air pressure to the ram if the pump does not prime properly with heavier fluids. Decrease the air pressure to the ram if fluid is forced out around the top seal or platen (D).

Change Drums

Drum Change Procedure

				
Excessive air pressure in the material drum could cause the drum to rupture, causing serious injury. The platen must be free to move out of the drum. Never use drum blowoff air with a damaged drum.				

1. Close the air motor slider valve (BF) to stop the pump.
2. If a normal operating pressure for the ram has been established, record this value before proceeding to step 3.
3. Reduce the pressure to the ram to 15-20 psi (0.1-0.14 MPa, 1.0-1.4 bar).
4. Press and hold the blowoff air button (BG) and set ram director valve (BC) to UP.
5. If necessary, gradually increase the ram air regulator (BB) pressure until the ram begins to rise.
6. Once the platen (D) begins to rise, pulse the blowoff button in one second intervals (one second ON, one second OFF) in order to keep the platen (D) moving while also minimizing pressure in the drum.
 - a. If the drum begins to raise off the ram base, press and hold the blowoff button (BG) until the drum contacts the ram base. Then pulse the blowoff button (BG) as necessary to maintain contact between the drum and the base plate of the ram.
 - b. If the drum raises significantly above the base of the ram and the drum tilts to one side on the

platen, causing blowoff air to escape between the platen and drum, move the ram director valve (BC) to the DOWN position to begin lowering the ram until the drum makes contact and realigns with the ram base.

				
Material splatter may occur as the platen exits the drum. Wear appropriate protective equipment when in the work area to help prevent serious injury from splashing fluid.				

NOTE: Read the **Drum Change Troubleshooting** section on page 26 for additional information if the drum appears to be stuck on the platen.

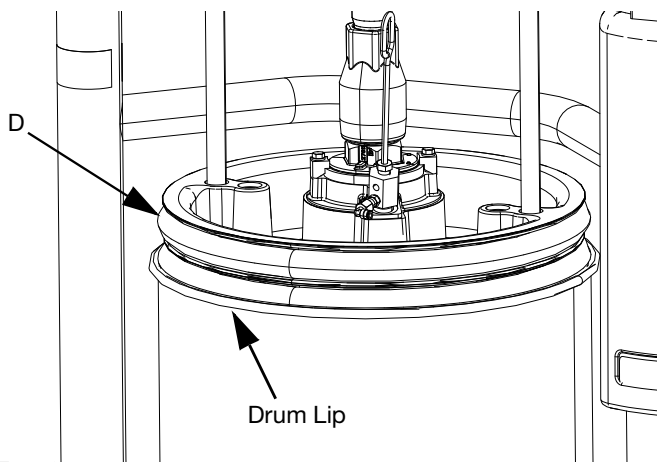






FIG. 21

- Use the minimum amount of blowoff air pressure necessary to push the platen out of the drum.
- Release the blowoff air button and allow the ram to rise to its full height. **2-Button Interlock:** If the system has this feature, the ram will stop as it nears the top. Press and hold both buttons to raise the ram completely. See FIG. 4 on page 14.
- Remove the empty drum.

				
Use a long-handled flat-bladed scraper if it is necessary to scrape the bottom of the platen (D). To avoid serious injury, do not put your hands or other body parts under the platen or near the pump inlet.				

- Inspect the platen (D) and, if necessary, remove any remaining material or material build-up.
- Follow the procedure to **Load Drums** on page 22.



Drum Change Troubleshooting

If the material drum begins to lift off of the ram base:

- Slow the lift speed of the ram by moving the ram director valve (BC) just above the neutral position.
- Press and hold the blowoff button (BG).
- When the drum makes contact with the ram base, move the ram director valve (BC) up slightly to increase the ram lift speed.
- Repeat the up and down motion of the ram director valve (BC), while pressing the blowoff button (BG), to adjust the lift speed and maintain contact between the material drum and ram base.

Perform steps 5-7 if the material drum rises significantly above the ram base and the drum tilts to one side on the platen, causing blowoff air to escape from between the platen and drum.

- Place the ram director valve (BC) in the neutral position to stop the ram from rising.

				
To prevent serious injury, keep hands and feet clear of the material drum as the drum is lowered and makes contact with the ram base plate.				

- Slowly move the ram director valve (BC) towards the DOWN position to begin lowering the ram until the drum makes contact and realigns with the base plate.
- Pay attention to the position of the drum as it lowers and makes contact with the base plate. If the drum lowers onto the drum stops, the drum will not fully realign with the platen (D). Lift the ram, without using blowoff air, then lower it again to reposition the drum on the base plate. It may be necessary to perform this step multiple times to fully realign the drum with the platen (D).

Shutdown of the Pump

Follow the **Pressure Relief Procedure** on page 21.

Remote DataTrak Setup

The remote DataTrak display unit comes fully assembled. Use the following instructions and figures to connect the remote DataTrak to the supply system.

The system requires either 100-240 Vac, 50/60 Hz input, or 24 Vdc to the power supply. Ensure that the main disconnect rocker switch on the ram power supply is set to OFF (O). Connect power to the DataTrak unit as detailed in **Connect Remote DataTrak to Power (Optional)** on page 16.

1. Feed the CAN cable (HB) and D-Sub cable (HA) under the remote DataTrak bracket and attach to the corresponding connectors on the remote DataTrak display.

NOTE: The CAN cable (HB) can connect to either of the two CAN style connectors on the remote DataTrak.

2. Snap the remote DataTrak unit onto the mount on the supply system.

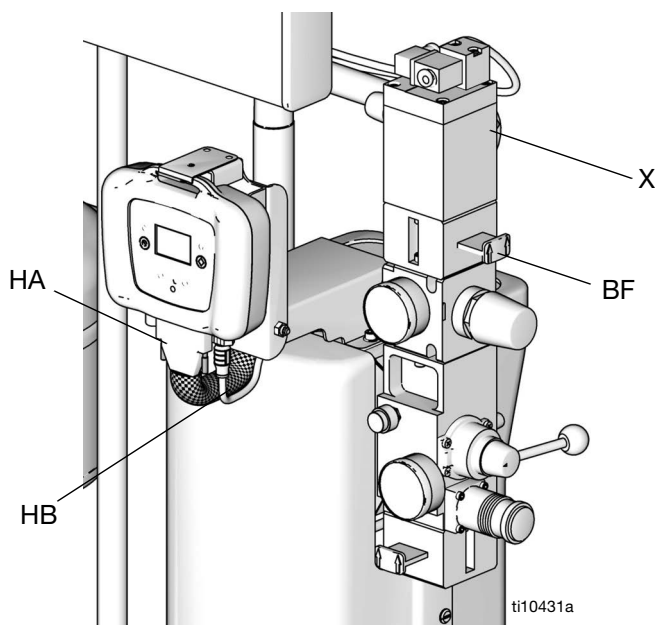


FIG. 22

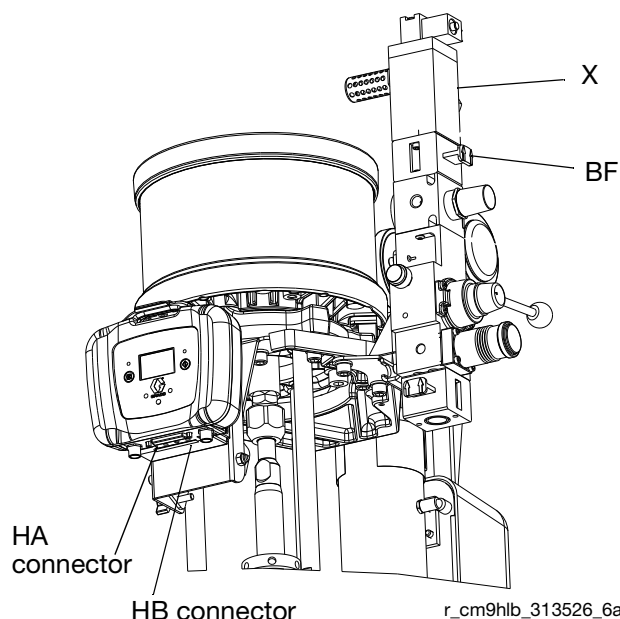


FIG. 23

3. **Drum Low/Empty Sensor:** If the system has this feature, attach the sensor cable to the corresponding connector on the D-Sub harness. See **Attach and Adjust Drum Low/Empty Sensor (Optional)** on page 17.
4. **Light Tower:** If the system has this feature, attach the connector on the light tower cable to the corresponding connector on the D-Sub harness. See manual 312493.
5. **Solenoid:** Attach the connector on the D-Sub harness to the corresponding connector on the solenoid (X).

Remote DataTrak Controls and Indicators

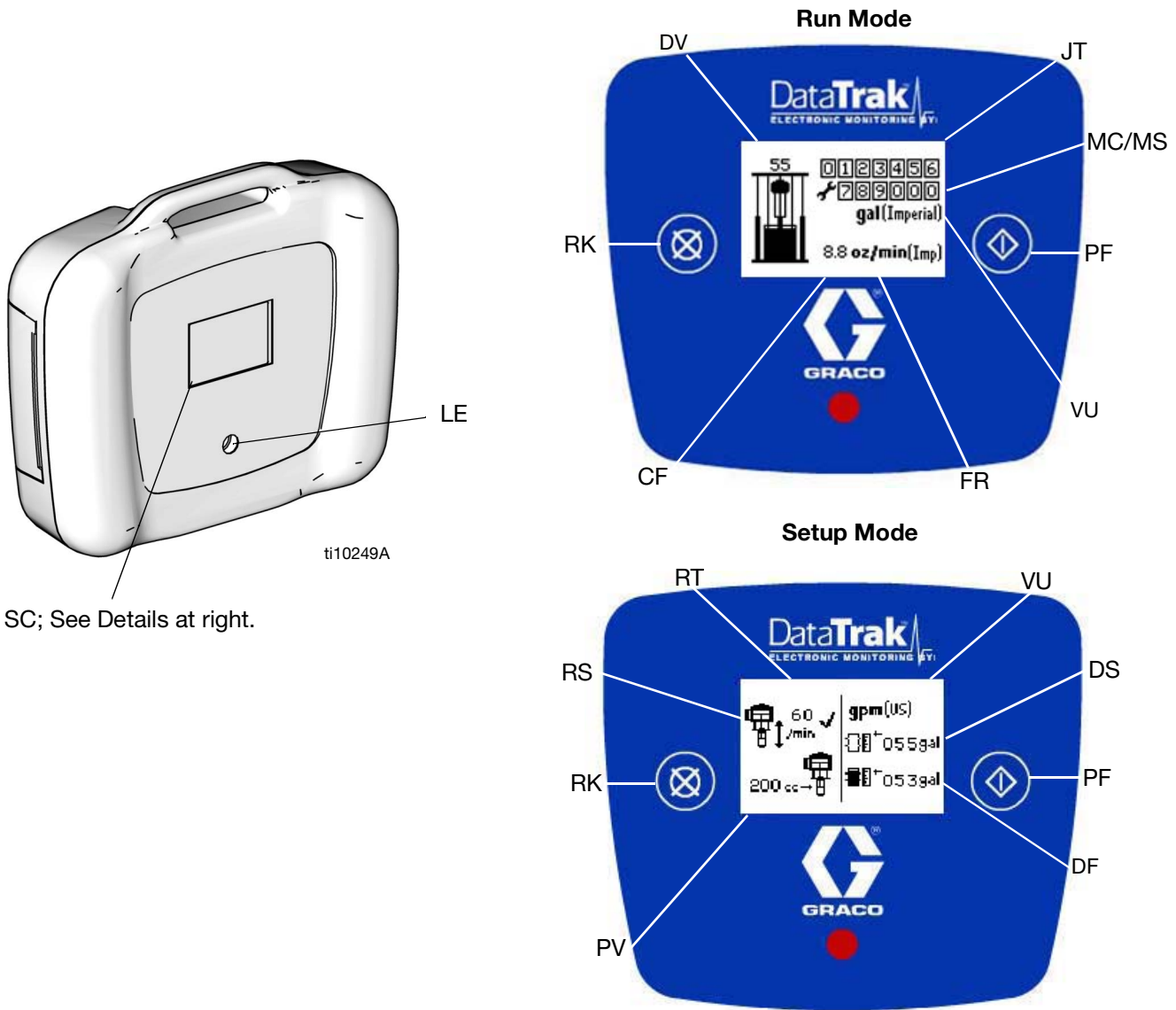


Fig. 24: Remote DataTrak Controls and Indicators

Key:

- SC Display Screen
- LE LED (diagnostic indicator when lit)
- FR Flow Rate Units, user settable to:

/min, = cycles per minute

- gpm [US] = gallons per minute, United States
- gpm [UK] = gallons per minute, United Kingdom
- oz/min [US] = ounces per minute United States
- oz/min [UK] = ounces per minute United Kingdom
- l/min = liters per minute
- cc/min = cubic centimeters per minute

VU Volume Units

- PF Prime/Flush Key
- RK Reset/Cancel Key (also used to scroll)
- CF Cycle/Flow Rate
- JT Job Total Counter (resettable)
- MC Maintenance Counter
- MS Maintenance Counter Setpoint (when highlighted)
- DV Drum Volume Remaining
- DS Drum Size
- DF Drum Fill Volume
- RT Runaway Protection (enable/disable)
- RS Runaway Cycle Rate
- PV Displacement Pump Volume

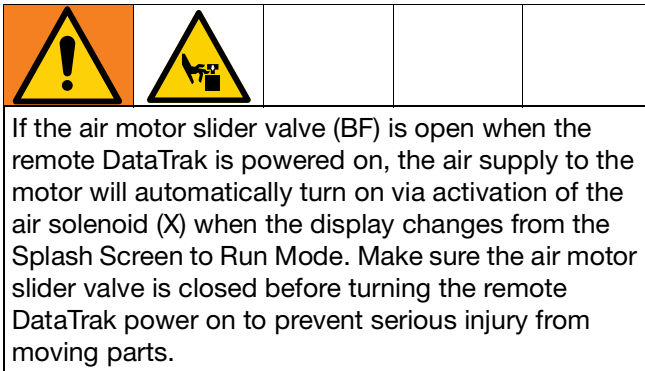
Remote DataTrak Operation

NOTICE

To prevent damage to soft key buttons, do not press the buttons with sharp objects such as pens, plastic cards, or fingernails.

Startup

1. Perform the **Start and Adjust Ram** procedure on page 22, and the **Start and Adjust Pump** procedure on page 24.



2. Close the air motor slider valve (BF) before turning the remote DataTrak power on.
3. Turn on the remote DataTrak system using the rocker switch on the ram power supply.

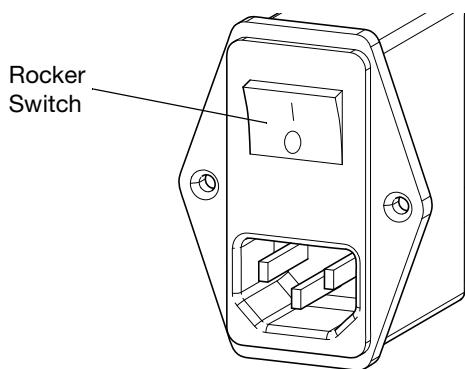


FIG. 25

4. The Splash Screen (FIG. 26) will flash on while the progress bar fills from left to right. It will then go directly to Run Mode (FIG. 27).
5. Follow the Start and Adjust Pump procedure in the pump manual.



FIG. 26: Splash Screen

Run Mode

See FIG. 24 and FIG. 27.

The Run Mode screen displays the resettable job total counter (JT), maintenance counter (MC), cycle/flow rate (CF), and the remaining volume in the drum (DV) in both numeric and icon versions.

NOTE: All items are displayed using the defined volume units (VU).

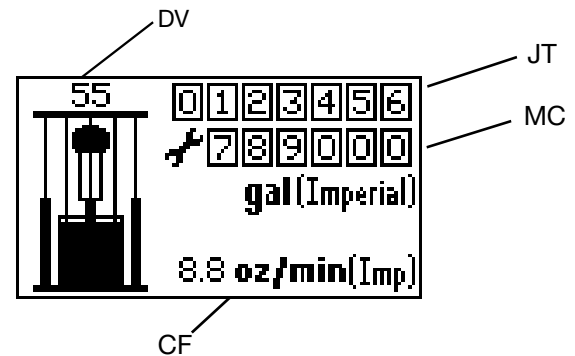







FIG. 27: Run Mode Screen

Key Functions When in Run Mode

1. To enter Prime Mode, press and release .
2. To enter Setup Mode (page 30), press and hold  for 3 seconds.
3. To enter Diagnostic Mode (page 33), press and release . The system will enter Diagnostic Mode only if there are active warnings/alarms.
4. To reset the job total counter, press and hold  from Run Mode for 3 seconds.

Prime Mode

1. Press  to enter Prime Mode screen. The Prime symbol (PS) will appear in the display and the LED (LE) will flash.

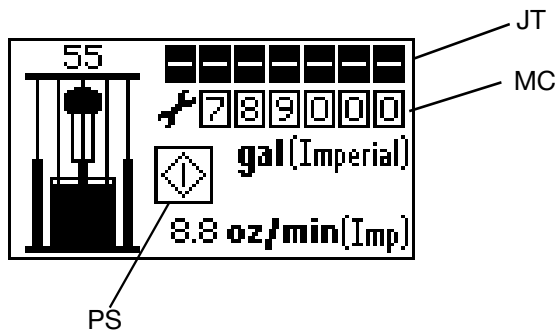





FIG. 28: Prime Mode Screen

2. While in Prime Mode, the job total counter (JT) is blank and will not count. However, the maintenance counter (MC) will continue to decrement.
3. When a new drum is installed, press and hold  while in Prime Mode to reset the drum volume remaining (DV) to the drum fill volume (DF).
4. To exit Prime Mode, press . The Prime symbol will disappear and the LED will stop flashing; the screen will return to Run Mode (FIG. 27).
5. To enter Setup Mode, press and hold  for 3 seconds.

Setup Mode

NOTE: If a key is not pressed within one minute of entering a setup screen, the system will return to Run Mode (FIG. 27).

Press and hold  for 3 seconds.

If a password has not been assigned (set to '0000'), the system will go directly to Setup screen 1.

Password Screen

If a password has been assigned (not set to '0000'), the Password screen will appear (FIG. 29). Enter the password to access the Setup screens.

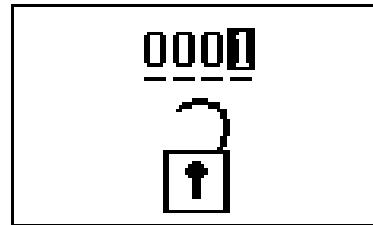







FIG. 29: Password Screen



1. To enter a password, press  to enter edit mode.
2. Once in edit mode, press  to scroll through digits.
3. Press  to select the correct digit and move on to the next.
4. When password is correct, press  on the rightmost digit to submit the password.

Setup Screen 1

Use Setup screen 1 to set runaway cycle rate (RS), enable/disable runaway protection (RT), select pump volume per cycle (PV), select flow rate units (FR), enter drum size (DS), and enter drum fill volume (DF). See FIG. 30.

1. Press  to toggle from field to field through the screen.

NOTE: If you go past a field you want to edit, toggle through the remaining fields, exit the Setup mode, and reenter Setup. It is impossible to back up in the Setup screens.

2. Press  to scroll through available values for each field.
3. Press  again to set the value and move the cursor to the next data field.

Runaway Cycle Rate/Enable Runaway Protection

NOTE: Graco recommends setting runaway cycle rate (RS) to 60 or less. Choose a value that is just above the maximum cycle rate of the application.



NOTE: When runaway protection is enabled (RT), a ✓ will appear on the setup screen. See FIG. 30.

Displacement Pump Volume

Press to scroll through the available displacement pump volumes (PV) in cc per cycle. set the values to the pump size installed. Refer to the Check-Mate Displacement Pumps Instructions-Parts manual, or the marking on the displacement pump cylinder.

Flow Rate Units

Press to scroll through the available flow rate units. See page 28. The selected units will be used to display flow rate and volume on the main Run screen and most of the setup values.

NOTE: Initially, choose units that will allow easy definition of the setup values (e.g. drum volume in gallons). Then, return and select the flow rate unit to display on the Run screen. The defined setup values will convert automatically.

Drum Size

Use DS to enter the size of the container.

Drum Fill Volume

Use the Drum Fill Volume field (DF) to enter the exact volume of material in the drum. Contact supplier for exact volume. This value is used to determine the remaining volume in the drum.

- To move to Setup screen 2, move the cursor to the Drum Fill Volume field (DF), then press once more.

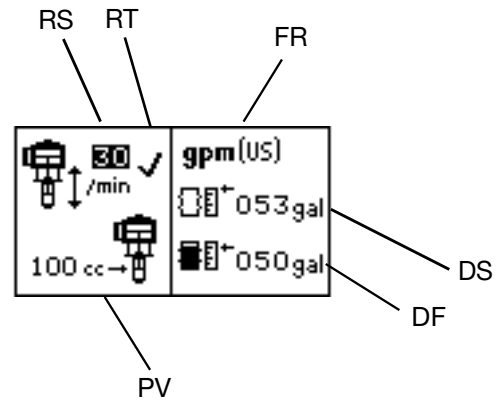


FIG. 30: Setup Screen 1

Setup Screen 2

Use Setup Screen 2 to set the maintenance counter setpoint (MC), reset the maintenance counter, enable/disable diagnostic codes (EC), and choose whether the E7 drum icon (DL) will indicate when the drum is low or when the drum is completely empty.

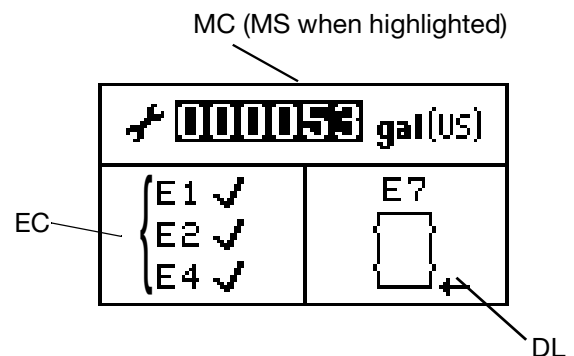


FIG. 31: Setup Screen 2

- Press to toggle from field to field through the screen.
- Press to scroll through available values for each field.
- Press again to set the value and move the cursor to the next data field.

Maintenance Counter

Use the maintenance counter setpoint (MS) to set the maintenance schedule based on the units displayed. Press and hold for 3 seconds when the entire MS field is highlighted to reset the MC value.

- See page 34 for a description of E1, E2, and E4 diagnostic codes.


NOTE: When E1, E2, and E4 diagnostic options are enabled, a ✓ will appear on the setup screen. See FIG. 31.


Drum Low/Empty Diagnostic Code

The E7 drum icon can represent either a drum low or a drum empty.

Drum Low: A drum low setting will result in a warning condition. The icon will show as an almost empty drum. The light tower and diagnostic LED will signal a warning. The pump will continue to cycle.

Drum Empty: A drum empty setting will result in an alarm condition. The icon will show as a completely empty drum. The light tower and diagnostic LED will signal an alarm. The pump will stop cycling.

Press  while E7 is selected to toggle between these options.

- To enter Setup screen 3, move the cursor to the E7 drum setting, then press  once more.

Setup Screen 3

Setup screen 3 displays a non-resettable grand total counter (GT) at the top. Use Setup screen 3 to set the password (PW), assign a time limit for the screensaver (SS), and adjust the LCD contrast (CS).

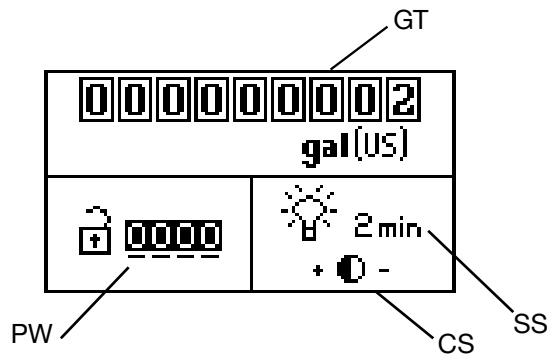







FIG. 32: Setup Screen 3

- Press  to toggle from field to field through the screen.
- Press  to scroll through available values for each field.
- Press  again to set the value and move the cursor to the next data field.

NOTE: The screensaver turns off the backlight of the LCD after the specified time has elapsed. A setting of 0 minutes is not recommended because it turns off the screensaver, leaving the backlight on constantly.

NOTE: When in the contrast setting field press  to adjust the contrast + (up) or - (down) respectively.

- To return to the Run screen, move the cursor to the contrast setting, then press  once more. If you entered Setup Mode from Prime Mode, you will be returned to that screen.


Diagnostic Mode


Diagnostics

Remote DataTrak can diagnose several problems with the supply system. When the monitor detects a problem, the LED (B) will flash and a diagnostic code will appear on the display. See Table 4: Diagnostic Codes on page 37.

If the accessory light tower kit is installed a light will illuminate or flash on the tower. See Table 4: Diagnostic Codes on page 37.

NOTE: Diagnostic screens will become the active screen as soon as the diagnostic code condition is detected. See Table 4: Diagnostic Codes on page 37.

To acknowledge the diagnosis and return to the normal operating screen, press  once. To clear a diagnostic code, see the section specific to the code.

See FIG. 24. Press and release  to access the Diagnostic screens. The system will enter Diagnostic Mode only if active warnings/alarms are present.

Runaway Diagnostic Code Screen

See FIG. 33. If pump runaway occurs, the Runaway screen becomes active, stopping the pump.

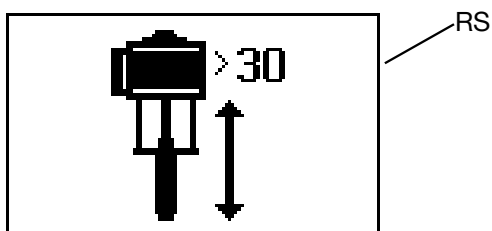



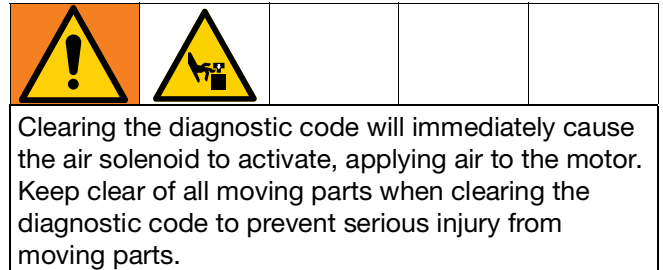



FIG. 33: Runaway Diagnostic Code Screen

1. Correct the condition causing the diagnostic code. See Table 4: Diagnostic Codes on page 37.
2. Press and release  to acknowledge the diagnostic code and return to the previous screen.
3. To clear the Runaway diagnostic code:
 - a. Press and release  to enter Diagnostic Mode from Run Mode (FIG. 27).

- b. Press and release  to scroll to the Runaway Diagnostic screen, or return to the previous Run screen if no other Diagnostic screens are active.



- c. Press and hold  for 3 seconds while on the runaway Diagnostic screen to clear the diagnostic code and scroll to the next available Diagnostic screen, or return to the previous Run screen if no other Diagnostic screens are active.

NOTE: To disable runaway monitoring, go to setup mode and set runaway value to 0 (zero) or toggle (RT) off. See FIG. 30.

Diving Up Diagnostic Code Screen

See FIG. 34. If the pump shows diving up symptoms and the E1 Diagnostic Code is enabled, the Diving Up screen becomes active.

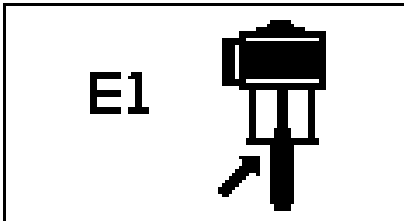






FIG. 34: Diving Up Diagnostic Code Screen

1. Press and release  to exit the Diving Up screen. This will set the diagnostic code as a standing diagnostic code. A standing diagnostic code has not been cleared, simply acknowledged.
2. Correct the condition causing the diagnostic code. See Table 4: Diagnostic Codes on page 37.
3. To clear the diagnostic code, navigate to the Diving Up diagnostic screen.
 - a. Press and release  to enter Diagnostic Mode from Run Mode.
 - b. Press and release  to scroll to the Diving Up Diagnostic screen, or return to the previous Run screen if no other Diagnostic screens are active.
 - c. Press and hold  for 3 seconds while on the Diving Up Diagnostic screen to clear the diagnostic code and scroll to the next available Diagnostic screen, or return to the previous Run screen if no other Diagnostic screens are active.

Diving Down Diagnostic Code Screen

See FIG. 35. If the pump shows diving down symptoms and the E2 Diagnostic Code is enabled, the Diving Down screen becomes active.

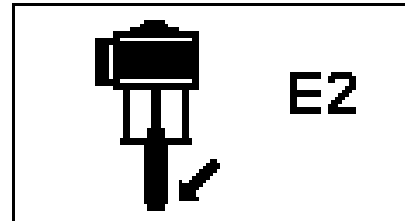






FIG. 35: Diving Down Diagnostic Code Screen

1. Press and release  to exit the Diving Down screen.
2. Correct the condition causing the diagnostic code. See Table 4: Diagnostic Codes on page 37.
3. To clear the diagnostic code, navigate to the Diving Down diagnostic screen.
 - a. Press and release  to enter Diagnostic Mode from Run Mode.
 - b. Press and release  to scroll to the Diving Down Diagnostic screen, or return to the previous Run screen if no other Diagnostic screens are active.
 - c. Press and hold  for 3 seconds while on the Diving Down Diagnostic Screen to clear the diagnostic code and scroll to the next available Diagnostic screen, or return to the previous Run screen if no other Diagnostic screens are active.

Disconnected Solenoid Diagnostic Code Screen

See FIG. 36. If the system detects a disconnected air motor solenoid and the E4 Diagnostic Code is enabled, the Disconnected Solenoid screen becomes active.

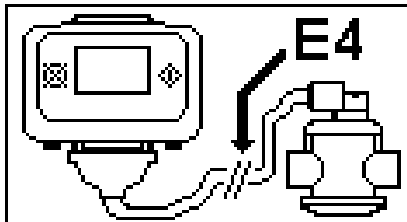



FIG. 36: Disconnected Solenoid Diagnostic Code Screen

1. Press and release  to exit the Disconnected Solenoid screen.
2. Correct the condition causing the diagnostic code; see Table 4: Diagnostic Codes on page 37.
3. This diagnostic code will automatically clear when the system detects that the solenoid is connected.

Drum Low/Empty Diagnostic Code Screen

See FIG. 37 and FIG. 38. If the drum low/empty sensor trips, the Drum Low or Drum Empty screen becomes active, depending on which sensor setting is chosen. See page 32.

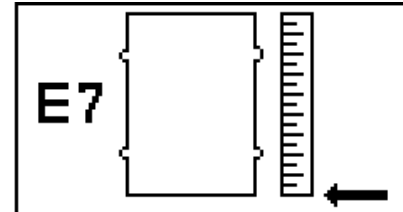


FIG. 37: Drum Empty Diagnostic Code Screen

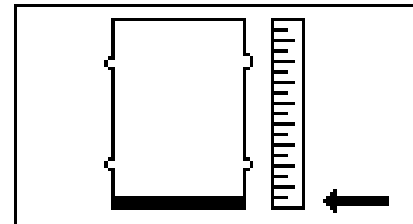



FIG. 38: Drum Low Diagnostic Code Screen

1. Press and release  to exit the Drum Low/Empty screen. This will set the diagnostic code as a standing diagnostic code. A standing diagnostic code has not been cleared, simply acknowledged.
2. Replace the low or empty drum with a full drum. When the sensor no longer detects a low or empty drum the diagnostic code will clear automatically.

Reed Switch Diagnostic Code Screen

If the system detects an air motor reed switch error, the Reed Switch Diagnostic screen becomes active.

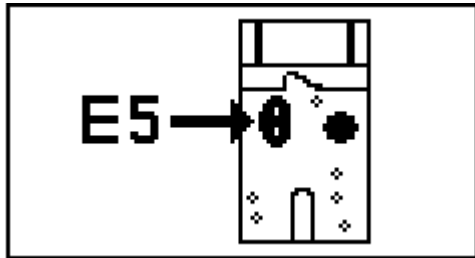






FIG. 39: Reed Switch Diagnostic Code Screen

1. Press and release  to exit the Reed Switch Diagnostic screen.
2. Correct the condition causing the diagnostic code. See Table 4: Diagnostic Codes on page 37.
3. To clear the diagnostic code, navigate to the Reed Switch diagnostic screen.
 - a. Press and release  to enter Diagnostic Mode from Run Mode.
 - b. Press and release  to scroll to the Reed Switch Diagnostic screen, or return to the previous Run screen if no other Diagnostic screens are active.
 - c. Press and hold  for 3 seconds while on the Reed Switch Diagnostic Screen to clear the diagnostic code and scroll to the next available Diagnostic screen, or return to the previous Run screen if no other Diagnostic screens are active.

Maintenance Counter Expired Screen

If the system has counted down to 0 from the setpoint for number of cycles/gallons/liters, the Maintenance Counter Expired Screen becomes active.

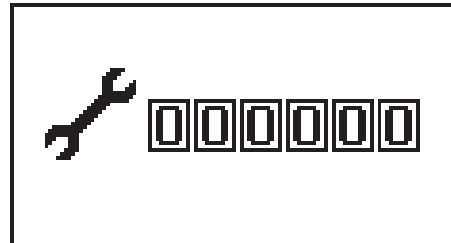


FIG. 40: Maintenance Counter Expired Screen


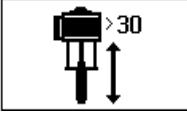


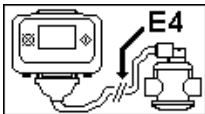
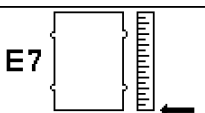
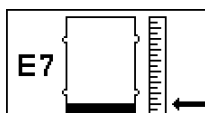
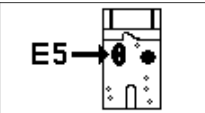

1. Press and release  to exit the Maintenance Counter Expired screen.
2. Perform necessary maintenance.
3. Reset the Maintenance Counter. See **Setup Screen 2** on page 31.

Table 4: Diagnostic Codes

Symbol	Code	Code Name	Diagnosis	Cause	LED Flash Code*	Accessory Light Tower Code
		Runaway	Pump running faster than set runaway limit.	<ul style="list-style-type: none"> Increased air pressure. Increased fluid output. Exhausted fluid supply. 	2	Red Solid
	E1	Diving Up	Leak during upstroke.	Worn piston valve or packings.	7	Yellow Solid
	E2	Diving Down	Leak during downstroke.	Worn intake valve or priming rod seal.	6	Yellow Solid
	E4	Disconnected Solenoid	Solenoid is disconnected.	<ul style="list-style-type: none"> Solenoid unplugged. Damaged solenoid wires. 	3	Red Solid
	E7	Drum Empty	Drum empty sensor has tripped.	Replace empty drum with full drum to clear.	4	Red Solid
	E7	Drum Low	Drum low sensor has tripped.	Replace empty drum with full drum to clear.	4	Red Flashing
	E5	Reed Switch	The air motor has seen multiple up strokes without a down stroke, or vice versa.	Damaged or disconnected reed switches.	8	Yellow Solid
		Maintenance Counter Expired	Maintenance Counter has counted down to 0 from setpoint.	Number of cycles/gallons/liters specified by setpoint have passed since last reset.	5	Yellow Flashing

* LED (LE, page 28) will flash a code, pause, then repeat.

Troubleshooting

Check all possible problems before disassembling the ram, pump, or platen. If equipped with a DataTrak, refer to the descriptions of DataTrak diagnostic codes on page 37. Refer to the Check-Mate, Dura-Flo, or NXT Pump Packages Instruction-Parts manual for pump troubleshooting and additional diagnostics.

Ram

Problem	Cause	Solution
Ram will not raise or lower.	Closed air valve or clogged air line to the ram cylinders.	Open the air valve, or clear the clogged air line/valve to the ram cylinders.
	Not enough air pressure.	Increase ram air pressure.
	Worn or damaged ram piston.	Replace. 55 Gallon, 16 Gallon and 5 Gallon Ram Modules Repair-Parts manual 334198.
	Air assist/blowoff air closed or clogged.	Open or clear the air assist/blowoff air line.
Ram raises and lowers too fast.	Ram air pressure is too high.	Decrease the ram air pressure.
Air leaks around cylinder rod.	Worn rod seal on ram.	Replace. Replace. 55 Gallon, 16 Gallon and 5 Gallon Ram Modules Repair-Parts manual 334198.
Fluid squeezes past ram plate wipers.	Ram air pressure too high.	Decrease the ram air pressure..
	Worn or damaged wipers on platen.	Replace. See the Remove and Reinstall Wipers section in the Supply Systems Repair-Parts manual.
Pump will not prime properly or pumps air.	Closed air valve or clogged air line to the air motor.	Open the air valve, or clear the clogged air line/valve to the air motor.
	Not enough air pressure.	Increase pressure to air motor.
	Worn or damaged pump piston.	Replace. See pump manual.
	Pump bleed valve closed or clogged.	Open or clear the pump bleed valve. See the Platen Maintenance section in the Supply Systems Repair-Parts manual.
	Platen bleed valve is dirty, worn, or damaged.	Clean or service the platen bleed valve.
Air assist valve will not push platen up.	Closed air valve, clogged air line, or clogged check valve in the blow off line.	Open or clear the air valve, air line, or blow off line. See the Platen Maintenance section in the Supply Systems Repair-Parts manual.
	Not enough blow off air pressure.	Increase blow off air pressure. Do not exceed regulated pressure.
	Blowoff air passage on platen clogged.	Clean the blowoff air passage on the platen. See the Platen Maintenance section in the Supply Systems Repair-Parts manual.

Dimensions

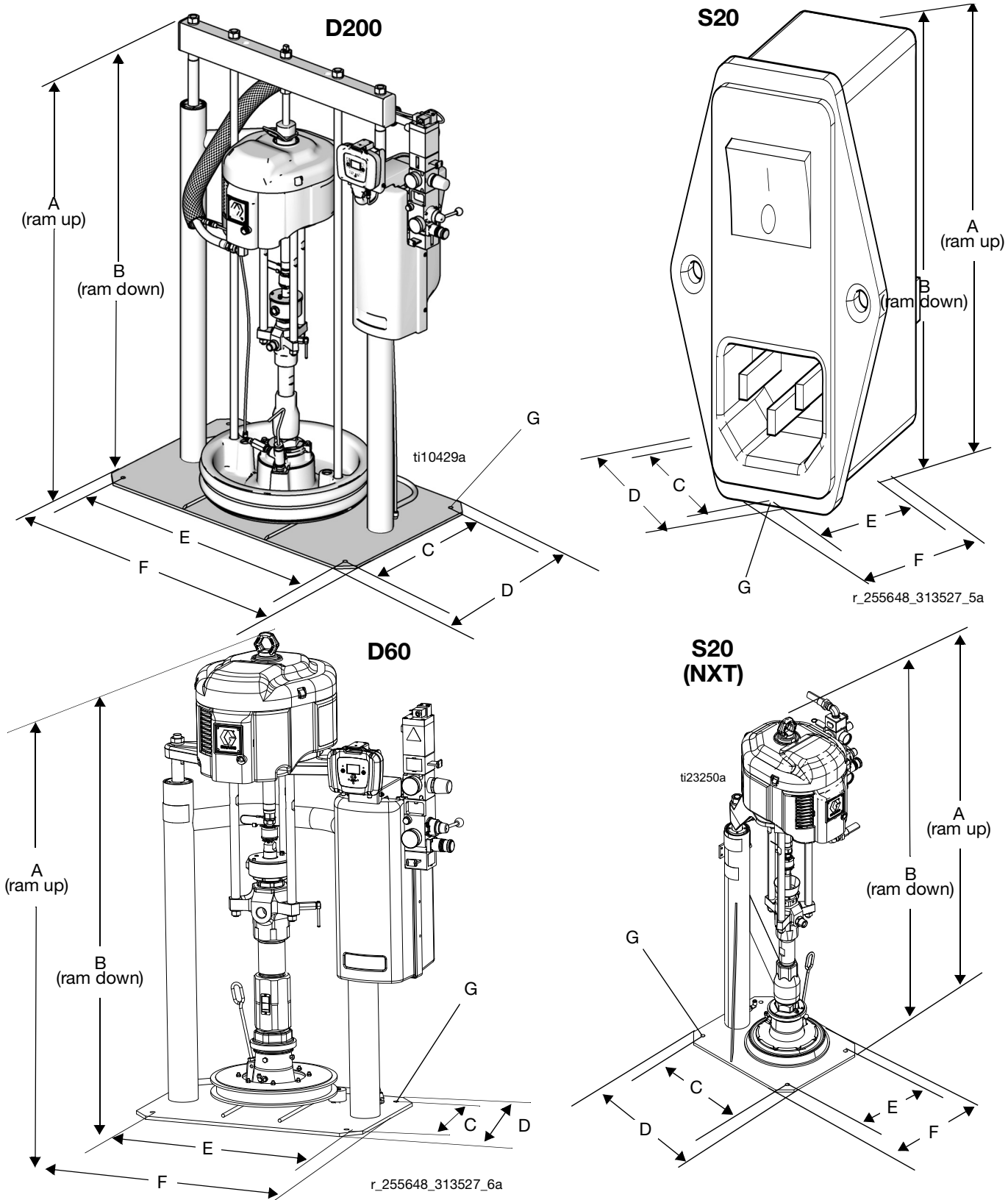


Fig. 41: Dimensions

Dimensions

Ram Model	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G Diameter in. (mm)
S20 (NXT)	84 (2133.6)	59 (1498.6)	16 (406.4)	19 (482.6)	11 (279.4)	15 (381)	4 x 0.56 (14.2)
S20	59.3 (1506)	35.8 (909)	16 (406.4)	19 (482.6)	11 (279.4)	15 (381)	4 x 0.56 (14.2)
S20c	90 (2286)	65 (1651)		26.0 (661)		22.1 (562)	
D60	89 (2260.6)	59 (1498.6)	14 (355.6)	18 (457.2)	24 (609.6)	28 (711.2)	4 x 0.56 (14.2)
D200	102.3 (2599)	64.8 (1646)	21.0 (533)	25.0 (635)	38.0 (965)	42.0 (1067)	4 x 0.56 (14.2)
D200s	109 (2769)	68.2 (1732)	21.0 (533)	25.0 (635)	40.3 (1023.6)	48.0 (1219)	4 x 0.63 (16)

Weight

Use the table below to identify the maximum weight for each available platen size.

Platen Size Gallons (Liters)	Maximum Weight lbs (kg)
55 (200)	51 (23)
30 (115)	44 (20)
16 (60)	25 (11.3)
8 (30)	21 (9.5)
5 (20)	19 (8.7)

See the identification plate (ID) for the weight of your supply system. See **Models** on page 4 for identification plate (ID) locations.

Schematics

Remote DataTrak, Light Tower, Drum Low/Empty Sensor

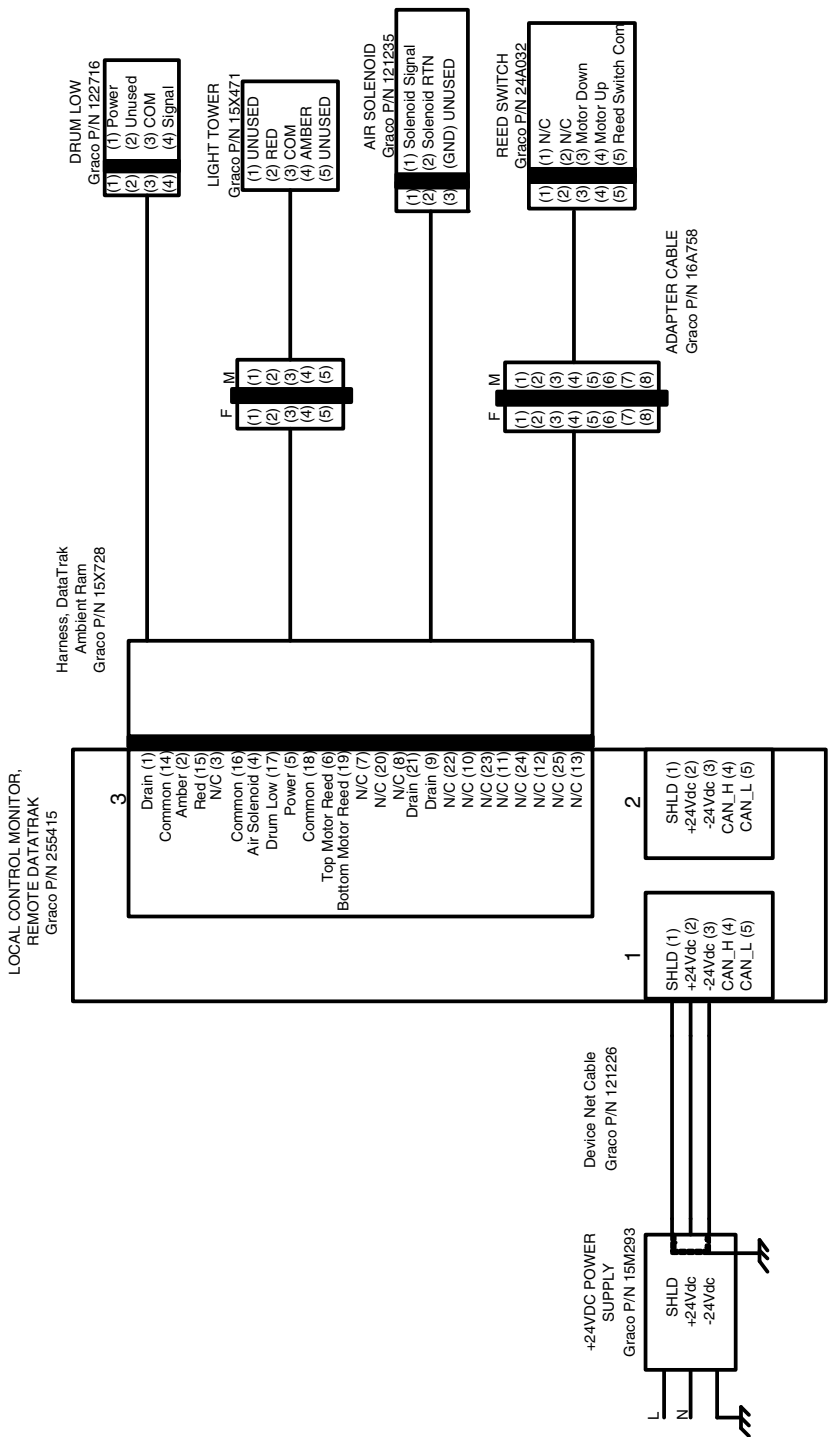


FIG. 42: Schematics

Recycling and Disposal

End of Product Life

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedure**.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Remove motors, batteries, circuit boards, LCDs (liquid crystal displays), and other electronic components. Recycle according to applicable regulations.
- Do not dispose of batteries or electronic components with household or commercial waste.



- Deliver remaining product to a recycling facility.

Technical Specifications

Supply Systems		
	US	Metric
Ambient operating temperature range	32-120 °F	0-49 °C
Sound Data	See separate air motor manual.	
Maximum fluid working pressure, and weight (displacement pump)		
Check-Mate displacement pumps	See manual 312376	
Dura-Flo displacement pumps	See manuals 311826, 311828, 311833	
Check-Mate Elite Series displacement pumps	See manual 3A8564	
Maximum air input pressure (supply system)		
S20 - 3 in. single post, 5 gal. (20L)	125 psi (0.9 MPa, 9 bar)	
D60 - 3 in. dual post, 5 gal. (20L), 16 gal. (60L), 30 gal. (115L)	150 psi (1.0 MPa, 10 bar)	
D200 - 3 in. dual post, 5 gal. (20L), 8 gal. (30L), 16 gal. (60L), 30 gal. (115L), 55 gal. (200L)	150 psi (1.0 MPa, 10 bar)	
D200s - 6.5 in. dual post, 30 gal. (115L), 55 gal. (200L)	125 psi (0.9 MPa, 9 bar)	
Air inlet size (supply system)		
S20 - 3 in. single post, 5 gal. (20L)	1/2 npt(f)	
D60 - 3 in. dual post, 5 gal. (20L), 16 gal. (60L), 30 gal. (115L)	3/4 npt(f)	
D200 - 3 in. dual post, 5 gal. (20L), 8 gal. (30L), 16 gal. (60L), 30 gal. (115L), 55 gal. (200L)	3/4 npt(f)	
D200s - 6.5 in. dual post, 30 gal. (115L), 55 gal. (200L)	3/4 npt(f)	
External power supply requirements (DataTrak)		
AC power units	100-240 Vac, 50/60 Hz, single phase, 1.2 amps max draw	
DC power units	24 Vdc, 1.2 amps max draw	
Weight		
System weight	System weight varies by model and options selected. See the identification plate (ID) for the weight of your supply system.	
Wetted Parts (displacement pump)		
Check-Mate displacement pumps	See Check-Mate Displacement Pumps Instructions-Parts manual	
Check-Mate Elite Series displacement pumps	See Check-Mate Elite Series Displacement Pumps Instructions-Repair-Parts manual	
Dura-Flo displacement pumps	See Carbon Steel Displacement Pump (1000cc) Instructions-Parts manual, Dura-Flo Displacement Pumps (430cc, 580cc) Instructions-Parts manual, or Dura-Flo Displacement Pumps (145cc, 180cc, 220cc, 290cc) Instructions-Parts manual	

Supply Systems	
	US
	Metric
Materials of construction (platen) (See Models on page 5 for platen and seal option codes)	
B : 257727, 5 gal. (20 L) J : 257732, 8 gal. (30 L) S : 257737, 16gal. (60 L)	Electroless nickel, polyurethane, nitrile, carbon steel, polyethylene, zinc plated carbon steel, buna, 316 sst, 17-4PH sst
C : 257728, 5 gal. (20 L) K : 257733, 8 gal. (30 L) T : 257740, 16gal. (60 L)	Electroless nickel, polyurethane, carbon steel, polyethylene, nitrile, zinc plated carbon steel, buna, 316 sst 17-4PH sst
F : 257729, 5 gal. (20 L) L : 257734, 8 gal. (30 L) U : 257738, 16gal. (60 L)	Stainless steel, polyurethane, PTFE coated nitrile, polyethylene, nitrile, PTFE, 303 sst, 304 sst, 316 sst, 17-4PH sst
G : 257730, 5 gal. (20 L) M : 257735, 8 gal. (30 L) W : 257739, 16gal. (60 L)	Electroless nickel, aramid reinforced elastomer, rubber-based PSA, nitrile, polyethylene, zinc plated carbon steel, buna, 1018 carbon steel, 304 sst, 316 sst, 17-4PH sst
H : 257731, 5 gal. (20 L) R : 257736, 8 gal. (30 L) Y : 257741, 16gal. (60 L)	Electroless nickel, reinforced elastomer, rubber-based PSA, polyurethane, polyethylene, nitrile, zinc plated carbon steel, buna, 1018 carbon steel, 304 sst, 316 sst, 17-4PH sst
7 : 255661, 30 gal. (115 L)	Zinc plated carbon steel, EPDM, sst, fluoroelastomer
8 : 255662, 55 gal. (200 L)	PTFE, EPDM, PTFE coated aluminum, zinc plated carbon steel, 316 sst
9 : 255663, 55 gal. (200 L)	EPDM, aluminum, zinc plated carbon steel, 316 sst
A : 255664, 55 gal. (200 L)	PTFE, neoprene, aluminum, zinc plated carbon steel, 316 sst
D : 24Y343, 55 gal. (200 L)	EPDM hose, aluminum, zinc plated carbon steel, 316 sst

Maximum Fluid Working Pressure (Mpa / bar / psi)					
Lower	Air Motor				
	L060	L100	L200	L250	L500
NXT200	3.4 / 34 / 500				
NXT400	7.6 / 76 / 1100				
NXT700	13.8 / 138 / 2000				
NXT1200	26.2 / 262 / 3800				
NXT1800	42.1 / 421 / 6100				
NXT2200		27.6 / 276 / 4000	15.9 / 159 / 2300		
NXT3400		43.4 / 434 / 6300	24.8 / 248 / 3600	20.0 / 200 / 2900	9.7 / 97 / 1400
NXT6500			42.7 / 427 / 6200	37.9 / 379 / 5500	17.9 / 179 / 2600
XL				42.7 / 427 / 6200	26.9 / 269 / 3900

California Proposition 65

CALIFORNIA RESIDENTS

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

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.

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

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Original instructions. This manual contains English. MM 313526

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