

INSTRUCTIONS-PARTS LIST



306-934

Rev. D 6-79
SUPERSEDES 9-76

This manual contains **IMPORTANT**
WARNINGS and **INSTRUCTIONS**
READ AND RETAIN FOR REFERENCE

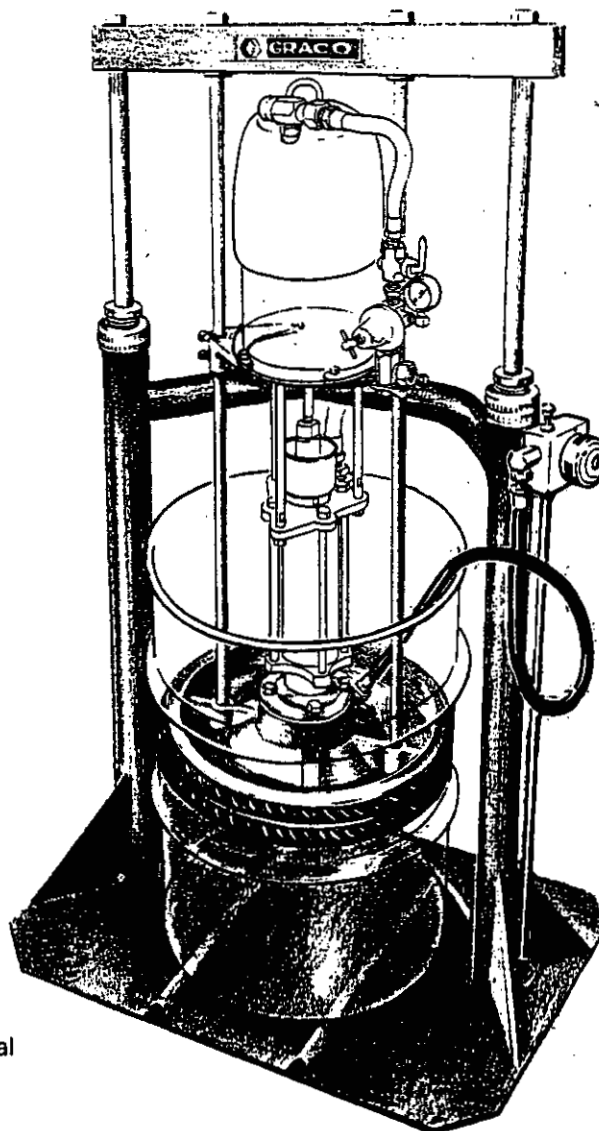
AIR POWERED

RAM

150 psi (10.5 bar) MAXIMUM WORKING PRESSURE

Model 207-279 Series H

55-Gallon Drum Size



- Forces high viscosity materials into pump intake valve.
- Air director valve to raise and lower Ram.
- Air push valve lets air into drum beneath inductor plate to raise inductor from empty drum — holds drum to base.
- Rubber hose type wipers wipe drum clean and seal material from atmosphere.
- Has mounting plate and brackets for easy mounting of GRACO pumps listed on page 5.

INSTALLATION

This air powered Ram extruder is designed to force high viscosity materials into the intake valve of a Graco pump of your choice, purchased separately. Pump and other accessory equipment that can be used with this Ram are listed on page 5 of this manual.

Locate Ram & Mount Pump

NOTE: Refer to dimensional drawing on back page for clearance needed to operate Ram.

Level base of Ram with metal shims. Using holes in base as a guide, drill holes for 0.5 in. (13 mm) anchors and bolt ram to floor.

Position pump mounting brackets so that top of pump will clear support beam. If you are mounting a Bulldog® pump, remove the mounting plate (58) from brackets (57). See Fig 1. Set pump mounting base on bracket with air inlet towards director valve and bolt pump to mounting with the screws and washers provided.

Take out the four screws (25) holding seal retainer plates (62) to inductor plate (63) and remove top seal retainer (62) and seal (51 or 56). See Fig 1. Slide seal retainer up over pump intake valve (A) and push seal (51 or 56) onto pump intake housing. See parts drawing on page 6.

NOTE: If an adapter is needed to connect your pump to inductor plate, install it in pump intake housing. For a 10:1 Bulldog pump with large intake housing and flange (B), remove the seal (51) and retainer plates (62). Install gasket (61), lower pump and bolt flange to inductor plate. See Fig 1.

Loosen mounting brackets setscrews (35), lower pump until intake valve is below lower seal retainer and tighten setscrews.

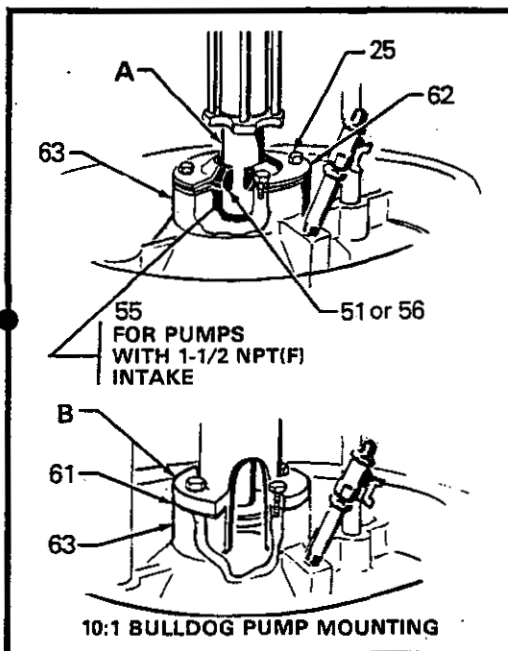
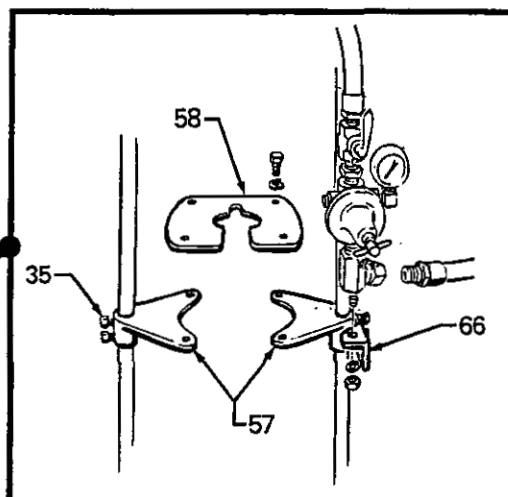
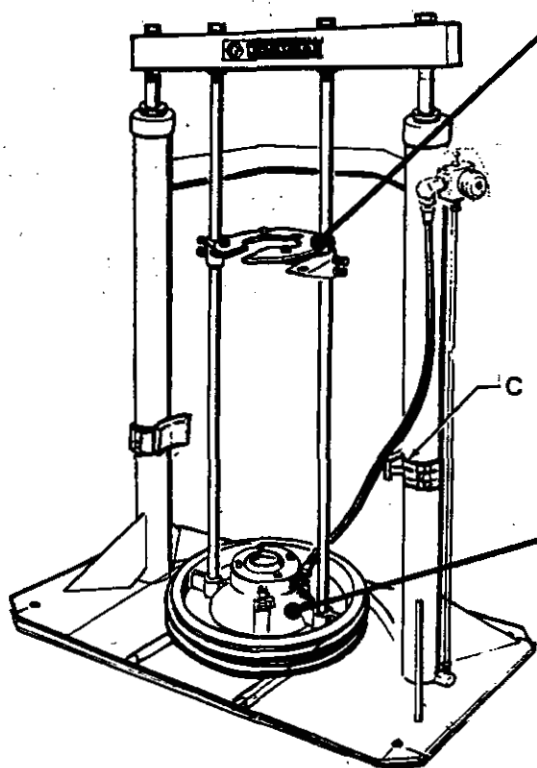
Push seal down firmly against lower seal retainer (62), put upper seal retainer (62) in place and secure tightly to inductor plate with the four screws and washers.

Install Accessories & Connect Hoses

Connect the air regulator (See ACCESSORY page) to the pump. For the Bulldog regulator kit 205-712 use the mounting bracket provided on Ram and install as shown in Fig 1. Install a bleed type air shutoff valve at the pump to start and stop pump.

Connect a suitable 0.38 in. (9.7 mm) min. ID air hose to director valve 1/4 npt(f) air inlet and to air supply line. See Fig 2. Connect air supply and material hoses to pump. Refer to separate pump instructions for recommended sizes.

NOTE: Install an air regulator for the Ram to increase or decrease pressure on material as required. See ACCESSORIES.



OPERATION

WARNING

Do not exceed 150 psi (10.5 bar) air pressure to the ram.

Before Pumping Material

Open master air valve, set pressure to Ram at about 80 psi (6 bar) and proceed as follows:

Turn director valve knob (17) to UP position (See Fig 2) and let Ram go up to its fully raised height.

Set a full drum of material on base plate, slide it back against tube stop and center it with inductor plate as close as possible. See Accessories for drum clamps (C, See Fig 1) 206-537 that center, hold, and properly align drum with ram. Then remove drum cover and smooth surface of material with a straight edge.

NOTE: Do not use drums that have side bungs or large dents with this Ram. Rough bung openings or large dents will damage inductor plate wipers, or stop inductor plate, resulting in a runaway pump.

Turn director valve knob to DOWN position and lower Ram until inductor plate is just ready to enter drum,

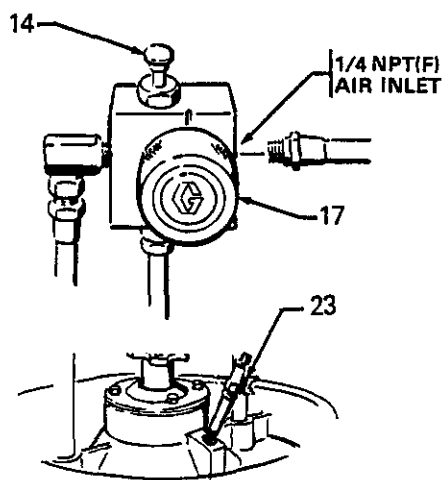


Fig 2

then turn valve to OFF. Reposition drum as necessary so wipers will not hit drum lip and open the vent valve (23) on the inductor plate. See Fig 2.

Turn director valve knob to DOWN position, lower inductor plate until all air is forced out and material comes out of vent opening. Then turn valve knob to OFF and close the inductor plate vent valve.

Set air pressure to pump at 50 psi (4 bar); turn director valve knob to DOWN position; start pump (open air shutoff and material dispensing valve); let pump run until system is primed and all air is forced out; close air shutoff or material dispensing valve to stop pump.

NOTE: Increase air pressure to Ram if pump doesn't prime properly with heavier materials. If material is forced out around top wiper, Ram pressure is too high for the material and air pressure should be decreased.

How To Use Ram

To pump material from drum, turn director valve knob to DOWN position and start pump. Always use lowest air pressure possible to both pump and Ram.

To change drums, stop pump and turn director valve knob to UP. Push air director valve button (14) in and hold until inductor plate clears top of drum. When Ram reaches its maximum height, remove empty drum, put full drum in place, lower Ram and remove air as explained above.

Shutdown Procedure

When Ram is not going to be used for any extended period, shut down as follows:

Turn director valve to OFF and shut off air supply to Ram and pump.

Relieve material pressure in line by opening dispensing valve. If accessory air line pin fittings are used, disconnect air line couplers from pump and Ram.

WARNING

Release all air and material pressures before servicing.

SERVICE

TROUBLESHOOTING CHART

WHATS WRONG

Ram won't raise or lower
Ram raises or lowers too fast
Air leaks around packing nuts (46)
Material squeezes past wipers (59,60)
Pump won't prime properly or pumps air
Air push valve (14) won't hold drum down or push plate up

WHY

Closed air valve or clogged air line
Not enough air pressure
Worn or damaged piston leathers
Director valve closed or clogged
Air pressure too high
Loose packing nut or worn packings
Worn or damaged wipers
Air push valve dirty, worn or damaged
Valve passage clogged

WHAT TO DO

Open, clear
Increase
Replace
Adjust, clear
Decrease
Tighten, replace
Replace
Clean, service
Clean

To Clean or Service Director Valve

Shut off air to Ram; turn director valve knob to OFF; pry out button plug (16); and hold hand under valve to catch ball (6) and seal (11). Screw stud (18) out of housing. See Parts Drawing. Remove knob (17), and take stud and springs (10&12) out of knob. Clean and inspect parts and put valve back together using new parts as necessary.

Push Valve Service

Shut off air supply, turn director valve to OFF. Screw seat (15) out of body; take out seat, poppet and stem assembly and valve spring. See Parts Drawing.

Remove poppet (21) and pull stem (20) out of seat (15). Refer to Fig 3. Clean and inspect all parts for wear or damage. Replace as necessary.

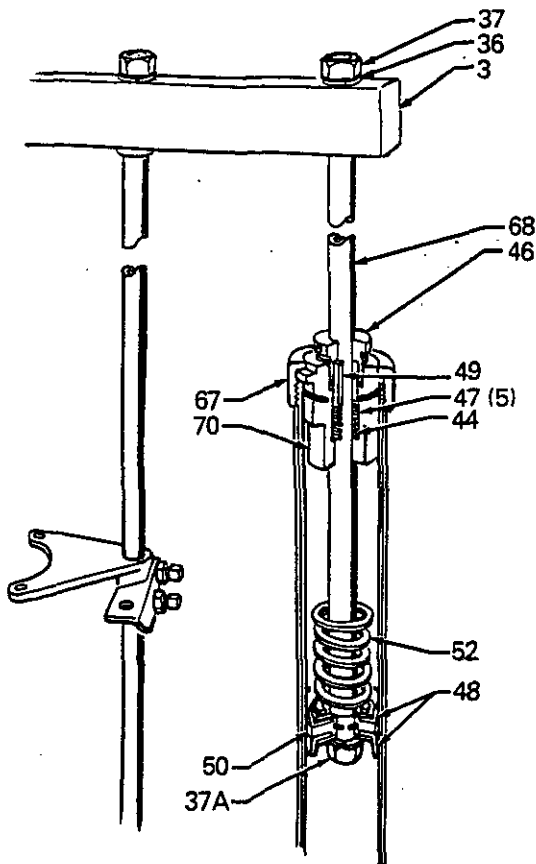
Piston Rod Packing Service

If air leaks around piston rod packing nut (46), tighten packing nut. If air leak continues, shut off air to Ram, turn director valve knob to OFF and proceed as follows:

Remove the four nuts (37) and lockwashers (36) holding support beam to rod and take off support beam. Then screw packing nut (46) out of housing (70) and slide it up off of piston rod (68). See Fig 3. Remove bearing (49), packings (47) and spring (44) and slide them up off piston rod. See Fig 3.

Inspect spring for damage and replace it if necessary. Lubricate new packings, then slide spring and packings down over rod and push them into housing. Slide packing nut down over rod, screw it into housing and tighten just snug. Don't overtighten.

Put support beam back onto rods and secure rods tightly to beam with the four nuts and washers.



Ram Piston Service

To replace piston leathers (48), shut off air to Ram; turn director valve knob to OFF; remove support beam (3) and proceed as follows:

Remove air cylinder cap (67) and slide it up off piston rod (68). Then loosen packing nut (46) and carefully slide packing, bearing and housing assembly (70) up off rod. See Fig 3. Carefully pull piston rod up out of air cylinder. Pull STRAIGHT up. If rod is cocked to one side, inside surfaces of air cylinder or piston body could be damaged. Carefully lay piston and rod down so rod won't be bent and remove piston retainer nut (37A), washer, piston parts and spring (52). See Fig 3.

Lubricate piston leathers and, using an automotive type ring compressor, carefully insert piston into air cylinder and push rod STRAIGHT down into cylinder. Slide packing, bearing and housing assembly down over rod, align pin (53) in housing with slot in cylinder, put cylinder cap back on and tighten packing nut. See Fig 3.

Put support beam back on rods and secure tightly with the four nuts and lockwashers. Then turn on air to Ram to check operation.

Replacing Wipers

To replace worn or damaged wipers raise Ram inductor plate up out of drum, remove drum from base, wipe off material from plate and proceed as follows:

Separate wiper butt joint and bend back the strapping covering clamp setscrew (B). See Fig 4. Loosen setscrews (B), pull end of strapping through clamp and remove wiper.

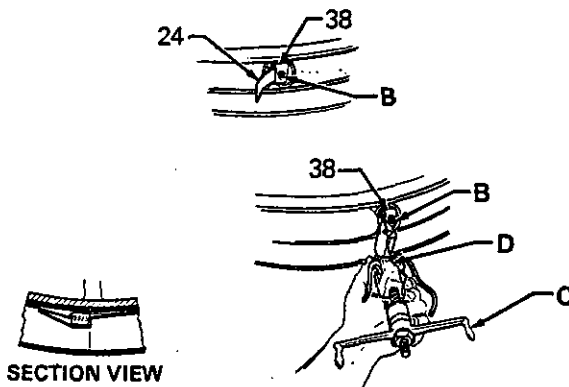


Fig 4

Pull strapping (24) out of wiper, straighten excess strapping, slide clamp toward end about 3 in. (76 mm) and bend excess strapping over back of clamp (38). See Fig 4. Put strapping through new wiper, put wiper on inductor plate, insert end of strapping through clamp and bend out to hold it. Position so that butt joints of wipers will be 180° apart.

NOTE: You will need the special banding tool (C) shown in Fig 4 to tighten strapping. See ACCESSORIES page.

Insert end of strapping (24) into tool (C) as shown and tighten securely. Turn setscrew (B) in tightly, cut strapping with cutter (D) on tool and bend end back over setscrew. See Fig 4.

Pound wiper all the way around with a rubber mallet until ends are butted tightly together.

ACCESSORIES (Must be purchased separately)

COUPLER 208-536
1/4 npt(f) INLET



PIN FITTING

169-970 3/8 npt(m)
Fits Regulator Inlet
169-971 1/4 npt(m)
Fits Ram Inlet

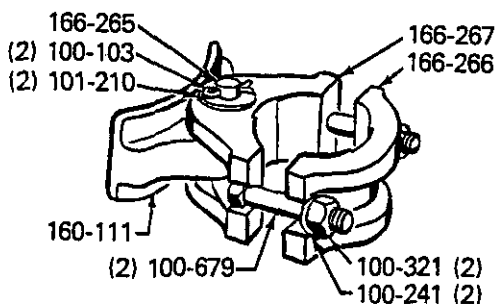


WIPER RING 165-601

22 in. (560 mm) OD
White neoprene; Food grade; replaces
Ref No. 59 & 60, page 6

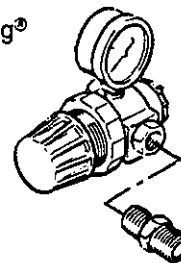
DRUM CLAM SET 206-537

(Includes two clamps)
Centers drum in place and prevents drum from moving.
See Fig 1, page 2 for information on installation.



AIR REGULATOR 202-156

300 psi (20 bar) MAXIMUM INLET PRESSURE
0-200 psi (0-14 bar) REDUCED PRESSURE RANGE
NITRILE RUBBER DIAPHRAM
For Ram and all pumps except Bulldog®

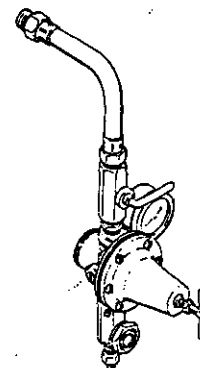


REDUCING NIPPLE 158-212

Needed For Use With Ram
When using Air Regulator 202-156

AIR REGULATOR 205-712

400 psi (28 bar) MAXIMUM INLET PRESSURE
10-125 psi (0.7-8.8 bar) REGULATED PRESSURE
RANGE
NITRILE RUBBER DIAPHRAM
For Bulldog® Pumps
See Instruction Manual 306-972



BANDING TOOL 158-092

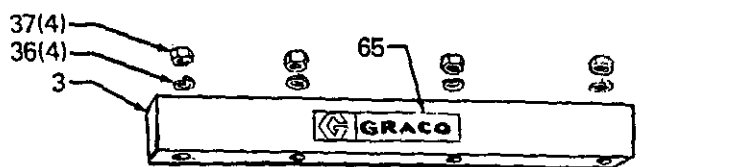
Used for tightening strapping when replacing wipers.

PUMP SELECTION CHART

Listed below are all the pumps that can be used with this Ram and the adapter and seal needed.

PUMP TYPE	MODEL NO.	RATIO	RATIO	INDUCTOR PLATE SEAL NEEDED*	ADAPTER NEEDED*	RECOMMENDED APPLICATION
MONARK	204-117	2:1	Divorced	160-098	160-314	Spray
	205-788	5:1	Divorced	160-098	160-314	Spray
	204-392	5:1	In-Line	160-098	None	Spray
PRESIDENT	205-000	3:1	Divorced	160-098	160-314	Transfer
	206-828	3:1	Divorced	160-098	160-314	Transfer
	205-789	10:1	Divorced	160-098	160-314	Spray/Extrusion
	205-627	10:1	In-Line	160-098	None	Spray/Extrusion
	205-628	10:1	In-Line	160-098	None	Spray/Extrusion
	205-629	10:1	In-Line	160-098	None	Spray/Extrusion
	205-791	24:1	Divorced	160-098	None	Extrusion
	205-792	24:1	Divorced	160-098	None	Extrusion
	206-738	24:1	Divorced	160-098	None	Extrusion
	206-739	48:1	Divorced	160-098	None	Extrusion
BULLDOG®	204-286	5:1	Divorced	160-098	None	Spray/Extrusion
	204-287	10:1	Divorced	None	None	Spray/Extrusion
	204-924	20:1	Divorced	161-452	None	Extrusion
	206-740	20:1	Divorced	161-452	None	Extrusion
	205-693	30:1	Divorced	161-452	None	Extrusion
	204-925	40:1	Divorced	160-098	None	Extrusion
	206-741	40:1	Divorced	160-098	None	Extrusion

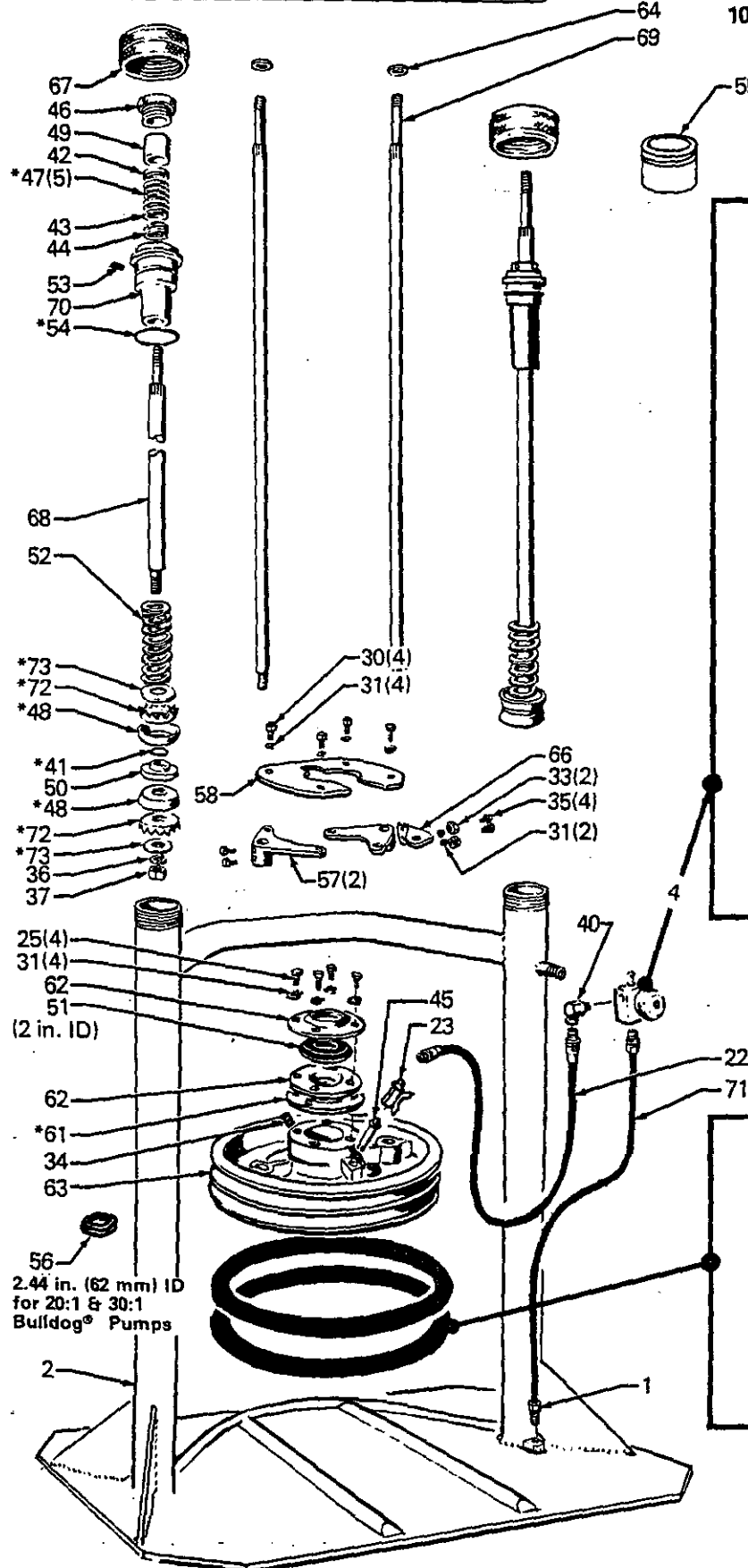
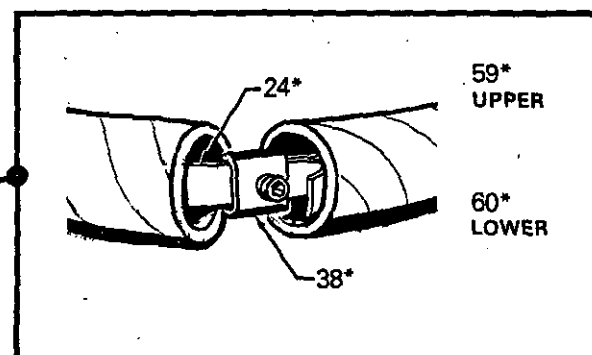
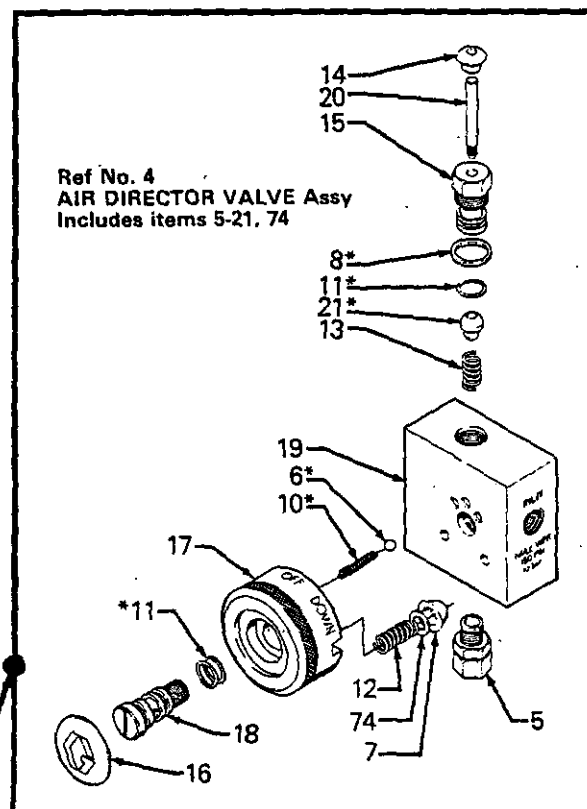
*Seals 160-098 and 161-452 and adapter 160-314 are standard with this Ram.



IN BAG

- | | | |
|---------|----------------|--------------------------------|
| 100-016 | (4) LOCKWASHER | For Mounting
Bulldog® Pumps |
| 100-022 | (4) CAPSCREW | |
| 100-057 | (3) CAPSCREW | For Mounting
Other Pumps |
| 100-214 | (3) LOCKWASHER | |

55 For pumps with 1-1/2 NPT(F) intake valve



REF NO.	PART NO.	DESCRIPTION	QTY	REF NO.	PART NO.	DESCRIPTION	QTY
1	205-437	COUPLING, tube; nylon tube	1	42	157-636	GLAND, female packing	2
2	215-335	RAM BASE & AIR CYLINDER	1	43	157-638	GLAND, male packing	2
3	207-346	BEAM, support	1	44	158-388	SPRING, helical compression	2
4	210-592	AIR DIRECTOR VALVE Assy	1	45	158-979	NIPPLE, reducing; 1/2 npt x 3/8 npt	1
	Series 8	Includes items 5-21, 74	1	46	159-046	NUT, packing; air cylinders	2
5	205-437	COUPLING, tube; nylon tube	1	47	*159-314	V-PACKING, pre-formed	10
6	*100-332	BALL, chrome alloy; 0.22 in. (5.6 mm) dia	1	48	*160-020	PACKING, leather cup	4
7	*102-960	V-PACKING, polyurthane	1	49	160-093	BEARING, piston rod; aluminum	2
8	*150-451	GASKET, copper	1	50	160-095	SPACER, piston leather	2
9	150-925	GASKET, copper	1	51	160-098	SEAL, inductor plate	1
10	*150-926	SPRING, helical compression	1	52	160-138	SPRING, helical compression	2
11	*155-685	SEAL, o-ring; nitrile rubber	3	53	160-139	PIN, lock	2
12	*156-200	SPRING, compression	1	54	*160-258	SEAL, o-ring; nitrile rubber	2
13	158-918	SPRING, helical compression	1	55	160-314	ADAPTER, pump intake; 1-1/2 npt(m)	1
14	158-920	BUTTON, push	1	56	161-452	SEAL, inductor plate	2
15	166-544	SEAT, valve	1	57	161-822	BRACKET, pump mounting	2
16	167-650	PLUG, button	1	58	162-225	PLATE, pump mounting	1
17	171-965	KNOB, control	1	59	*162-230	WIPPER, rubber hose; 1.25 in. (31.8 mm) ID; 67.56 in. (1.7 m) lg	1
18	168-814	STUD, valve	1	60	*162-231	WIPER, rubber hose; 1.25 in. (31.8 mm) ID; 66.88 in. (1.7 m) lg	1
19	171-977	HOUSING, valve	1	61	*162-788	GASKET, cork	1
20	169-217	STEM, valve	1	62	162-789	PLATE, seal retainer	2
21	*169-218	POPPET, valve	1	63	162-790	PLATE, inductor	1
22	208-048	HOSE, air; cpld 1/4 npt x 3/8 npt(mbe); 3/8 in. ID; 48 in. (1.2 m) lg	1	64	164-362	WASHER, flat; 3/4	2
23	208-391	BALL VALVE (See 307-068 for service)	1	65	165-188	DECAL, Graco "G"	1
24	*168-035	STRAPPING, steel; 0.02 in. (0.5 mm) thick; 0.75 in. (19 mm) wide; 84 in. (2.1 m) lg	2	66	166-016	BRACKET, mounting	1
25	100-004	SCREW, hex hd cap; 3/8-16 x 1-1/4	4	67	166-552	CAP, cylinder	2
26	100-016	LOCKWASHER, spring; 1/4	4	68	167-651	ROD, ram piston	2
27	100-022	SCREW, hex hd cap; 1/4-20 x 3/4	4	69	167-652	ROD, tie	2
28	100-055	SCREW, type "u" drive; no. 6 x 1/4	2	70	176-630	HOUSING, packing	2
29	100-057	SCREW, hex hd cap; 5/16-18 x 3/4	3	71	167-654	TUBE, nylon; 0.25 in. (6.4 mm) ID; 42.75 in. (1 m) lg	1
30	100-101	SCREW, hex hd cap; 3/8-16 x 1 in.	4	72	*172-580	SPREADER, piston leather	4
31	100-133	LOCKWASHER, spring; 3/8	10	73	*106-255	WASHER, back-up	4
32	100-214	LOCKWASHER, spring; 5/16	3	74	166-255	PACKING, sst	1
33	100-340	NUT, hex jam; 3/8-16	2				
34	104-663	PLUG, pipe; square head, 3/4 npt	1				
35	100-672	SCREW, sq hd cup pt; 3/8-16 x 1 in.	4				
36	101-533	LOCKWASHER, spring; 7/8	6				
37	101-535	NUT, hex 7/8-9	6				
38	*101-817	CLAMP, strapping; wipers	2				
39	150-707	PLATE, serial	1				
40	155-541	UNION, 90° swivel; 1/4 npt(m) x 1/4 nps swivel	1				
41	*156-401	SEAL, o-ring; nitrile rubber	2				

**Recommended "tool box" spare parts. Keep on hand to reduce down time.*

Order parts by name and number. Always give the model number and series letter of the assembly for which you are ordering.

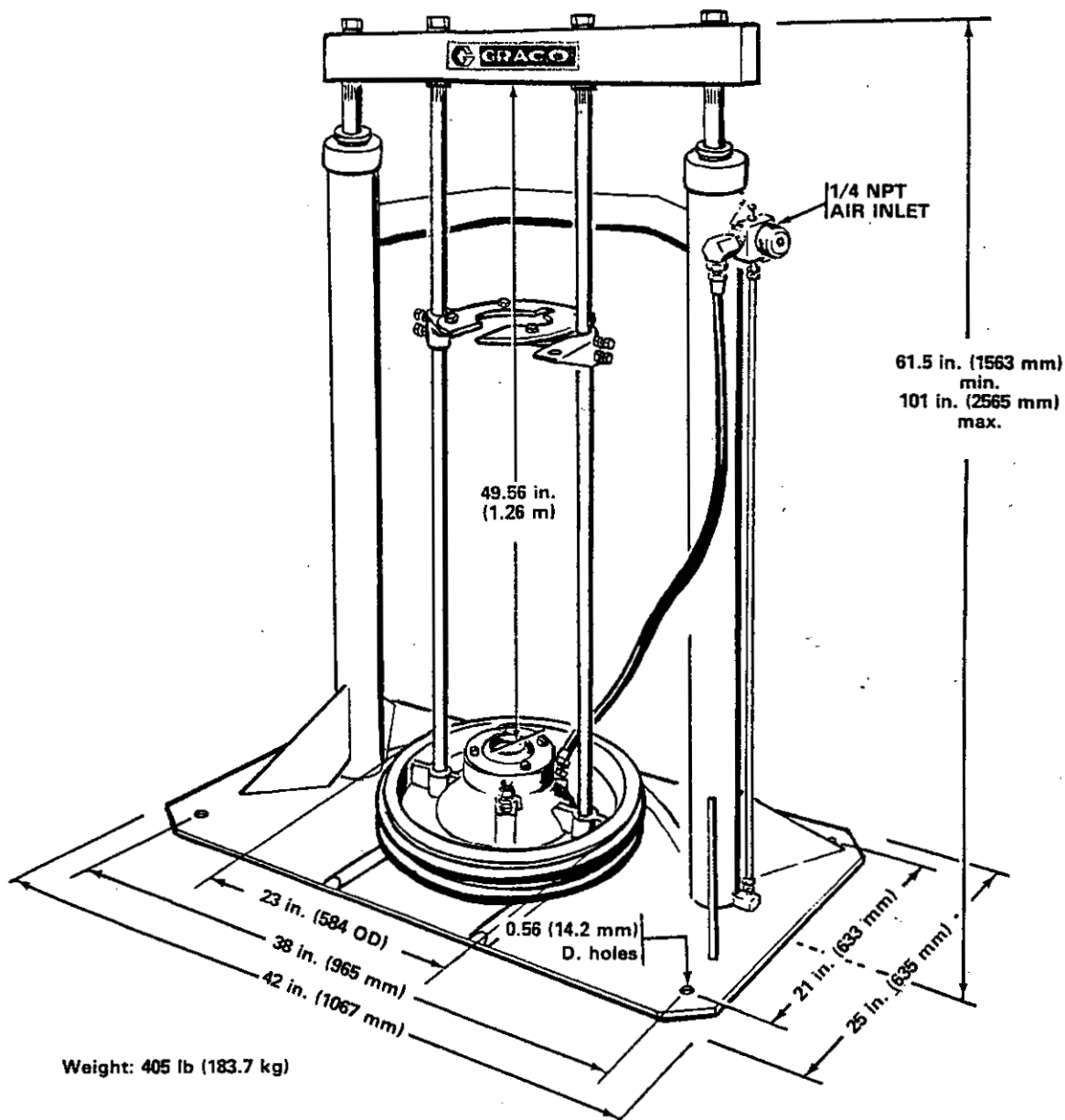
SERVICE INFORMATION

Listed below by the assembly changed are OLD, NEW and ADDED parts.

ASSEMBLY CHANGED	PART DESIGNATION	REF NO.	PART NO.	NAME
207-279 Final Assy to H Air Valve	OLD		100-344	Plug
	NEW	34	104-663	Plug
	OLD		207-345	Base
	OLD		167-653	Housing
	NEW	2	215-335	Base
	NEW	70	176-630	Housing
210-592 To Series B	ADDED	74	166-244	Packing

INTERCHANGEABILITY NOTE: NEW part replaces OLD part listed directly above it.

DIMENSIONAL DRAWING



THE GRACO WARRANTY

Graco Inc. warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship under normal use and service. This warranty extends to the original purchaser for a period of 12 months from the date of purchase and applies only when the equipment is installed and operated in accordance with written factory recommendations. This warranty does not cover damage or wear which, in the reasonable judgment of Graco, arises from misuse, abrasion, corrosion, negligence, accident, substitution of non-Graco parts, faulty installation or tampering.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective for examination by Graco to verify 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 workmanship or material, repairs will be made at a reasonable charge and return transportation will be charged.

THIS LIMITED WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES (EXPRESS OR IMPLIED) INCLUDING WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF ANY NON-CONTRACTUAL LIABILITIES INCLUDING PRODUCT LIABILITIES BASED ON NEGLIGENCE OR STRICT LIABILITY. EVERY FORM OF LIABILITY FOR DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS IS EXPRESSLY EXCLUDED AND DENIED.

EQUIPMENT NOT COVERED BY GRACO WARRANTY. Accessories or components of equipment sold by Graco that are 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 such claims.

Factory Branches: Atlanta, Cleveland, Dallas, Detroit (Southfield), Los Angeles, West Caldwell (N.J.)
Subsidiary and Affiliate Companies: Canada; England; Switzerland; France; Germany; Hong Kong; Japan
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