



Instruction Manual

220 Fluid Section

10 40 27 [Plasma Nitrided Rod]

10 40 32 [Ceramic Coated Rod]

**BINKS**

Product Description

Pumps - Maple, , AX260, AX320, FX190,
FX220, FX440, FX880, DVP, 104027,
104032, 104077, 104025, 104023,
104028,

This Product is designed for use with: Solvent and Water based Materials

Suitable for use in hazardous area: Zone 1 & 2

Protection Level: II 2 G X T4

Manufacturer: Binks,
Justus-von-Liebig - Strasse,
63128 Dietzenbach. DE

EU Declaration of Conformity

We: Binks declare that the above product conforms with the Provisions of:

Machinery Directive 2006/42/EC

ATEX Directive 94/9/EC

by complying with the following statutory documents and harmonized standards:

EN ISO 12100: Safety of Machinery - General Principles for Design

EN ISO 4413: Hydraulic Fluid Power - General Rules and safety requirements

EN ISO 4414: Pneumatic Fluid Power - General Rules and safety requirements

EN 12621: Machinery for the supply and circulation of coating materials under pressure - Safety requirements

EN1127-1: Explosive atmospheres - Explosion prevention - Basic concepts

EN 13463-1: Non electrical equipment for use in potentially explosive atmospheres - Basic methods and requirements

EN 13463-5: Non electrical equipment for use in potentially explosive atmospheres - Protection by constructional safety

Providing all conditions of safe use stated within the product manuals have been complied with and that the final equipment into which this product is installed has been re-assessed as required, in accordance with essential health and safety requirements of the above standards, directives and statutory instruments and also installed in accordance with any applicable local codes of practice.

D Smith (General Manager)

01 November 2012

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General Description – Section 1.1

The 220 fluid paint pump is a plated carbon steel constructed unit, designed for pumping High Viscosity materials such as Mastic, PVC, Underseals, Sound deadeners and other similar materials.

The fluid section is a 'ROD' type design which means the rod displaces the material and is the only wear contact with the packings. A two-ball check valve system ensures precise, smooth volume output. Tungsten Carbide ball seats ensure maximum operating life between servicing.

The interior design maintains high flow capacity with minimum pressure drop ensuring high efficiency; special surface treatments provide a smooth micro surface making cleaning and flushing easier.

The piston and rod seals are the chevron type, which can be adjusted by means of a gland nut, should wear occur, a preloaded wave spring is employed to adjust and maintain the chevron packing preload when wear occurs. A built in Solvent cup cleans and lubricates the pump rod and seals to prolong working life.

A standard SAE flange is incorporated into the design of the inlet and outlet connections. This allows for the inlet and outlet connections to be easily changed from the standard NPT to other available connections.

The Fluid Section can be assembled and dismantled using Standard Allen Keys

The standard pump rod is hard plasma nitride coated to increase life and resist wear from abrasive materials.

For extreme duties a stainless steel ceramic coated rod is available designed to work with more aggressive & abrasive materials.



Fluid Section shown with
A260 Air Motor

Specification – Section 1.2

Feature	Unit
Flow at 60 cycles/min	3.6 US Gal. /min. 13.2 Litres/min.
Flow per cycle	0.06 US Gallons 0.220 Litres
Using A260 air motor - 104058 Recommended continuous cycle rate:- 12 cycles/min Recommended intermittent cycle rate:- 25 cycles/min	
Pump Stroke	5" 127 mm
Ratio with B10 Air motor (104013 Pump Assembly)	60:1
Maximum Fluid Pressure	6000 PSI 412 BAR
Fluid Inlet	1 ¼" NPT
Fluid Outlet	1" NPT
Weight complete with B10 Air Motor	136 Pounds 62 KG
Rod Surface Treatment (Standard Duty) (Extreme Duty)	Plasma Nitride Coated Ceramic Coated
Rod Upper Packing Seal	Adjustable Chevron - UHMWPE
Rod Lower Packing Seal	Chevron - UHMWPE

Important Safety Information - Section 2.1

Directions for Working Safety

This Product has been constructed according to advanced technological standards and is operationally reliable. Damage may, however, result if it is used incorrectly by untrained persons or used for purposes other than those for which it was constructed.

The locally current regulations for safety and prevention of accidents are valid for the operation of this product under all circumstances.

International, national and company safety regulations are to be observed for the installation and operation of this product, as well as the procedures involved in maintenance, repairs and cleaning.

These instructions are intended to be read, understood and observed in all points by those responsible for this product. These operating and maintenance instructions are intended to ensure trouble free operation. Therefore, it is recommended to read these instructions carefully before start-up. Binks cannot be held responsible for damage or malfunctions resulting from the non-observance of the operating instructions. These instructions including regulations and technical drawings may not be copied, distributed, used for commercial purposes or given to others either in full or in part without the consent of Binks.

We reserve the right to alter drawings and specifications necessary for the technical improvement of this product without notice.

High Pressure/Electrostatic Warning

High pressure equipment can be dangerous if used incorrectly, serious bodily injury may occur if the following instructions are ignored. Installation and maintenance should only be carried out by suitably qualified personnel.

1. Before attempting any work on a high-pressure system ensure material pump, hydraulics, compressed air motor are isolated where relevant.
 2. Relieve all pressure from the system. Note: It is possible for pressure to get locked into a system, therefore, ensure all sections of the system are checked thoroughly for remaining pressure.
 3. Take care when releasing fittings
 4. Always replace worn hoses immediately
 5. Never plug a leak with your finger, adhesive tape or other stop gap devices
- Always ensure equipment is suitably earthed before running, to avoid any chance of electrostatic build up.

Equipment Misuse Hazard

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose.
- Do not alter or modify this equipment. Use only genuine Binks parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure stated on the equipment or in the Technical Data for your equipment. Do not exceed the maximum working pressure of the lowest rated component in your system.
- Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the Technical Data section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose hoses to temperatures above 82°C (180°F) or below -40°C (-40°F).
- Wear hearing protection when operating this equipment.
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

Important Safety Information - Section 2.1

Fire, Explosion and Electric Shock Hazard

Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire, explosion, or electric shock.

When installed and operated in accordance with its instructions, the unit is approved for operation in Zone 1 (Europe) & Division 1 (North America), hazardous locations. (ATEX Cat 2)

- Electrical equipment must be installed, operated, and serviced only by trained, qualified personnel who fully understand the requirements stated in this instruction manual.
- Ground the equipment and all other electrically conductive objects in the spray area. Keep all covers tight while the motor is energized.
- If there is any static sparking or you feel an electric shock while using this equipment, stop spraying/dispensing immediately. Do not use the equipment until you identify and correct the problem.
- Provide fresh air ventilation to avoid the build up of flammable fumes from solvents or the fluid being pumped.
- Keep the pumping area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the pumping area.
- Extinguish all open flames or pilot lights in the spray/dispense area.
- Do not smoke in the spray/dispense area.
- Do not turn on or off any light switch in the spray/dispense area while operating or if fumes are present.
- Do not operate a gasoline engine in the spray/dispense area.

Hot Surface Hazard

- The electric motor becomes hot during operation, and the heat may be transferred to other connected equipment. To reduce the risk of burning yourself, do not touch the motor surfaces while it is operating. Before servicing, allow the motor to cool.
- Keep flammable materials and debris away from the equipment.

Pressurized Equipment Hazard

Spray from the gun/valve, hose leaks, or ruptured components can splash fluid in the eyes or on the skin and cause serious injury.

- Do not point the gun/valve at anyone or at any part of the body.
- Do not stop or deflect leaks with your hand, body, glove or rag.
- Follow the Pressure Relief Procedure whenever you: are instructed to relieve pressure; stop spraying/dispensing; clean, check, or service the equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.

Toxic Fluid Hazard

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

Moving Parts Hazard

Moving parts, such as the cam and drive mechanism, can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Never remove the drive section cover while operating the pump.

Before servicing the equipment prevent the equipment from starting unexpectedly

Installation – Section 3.1

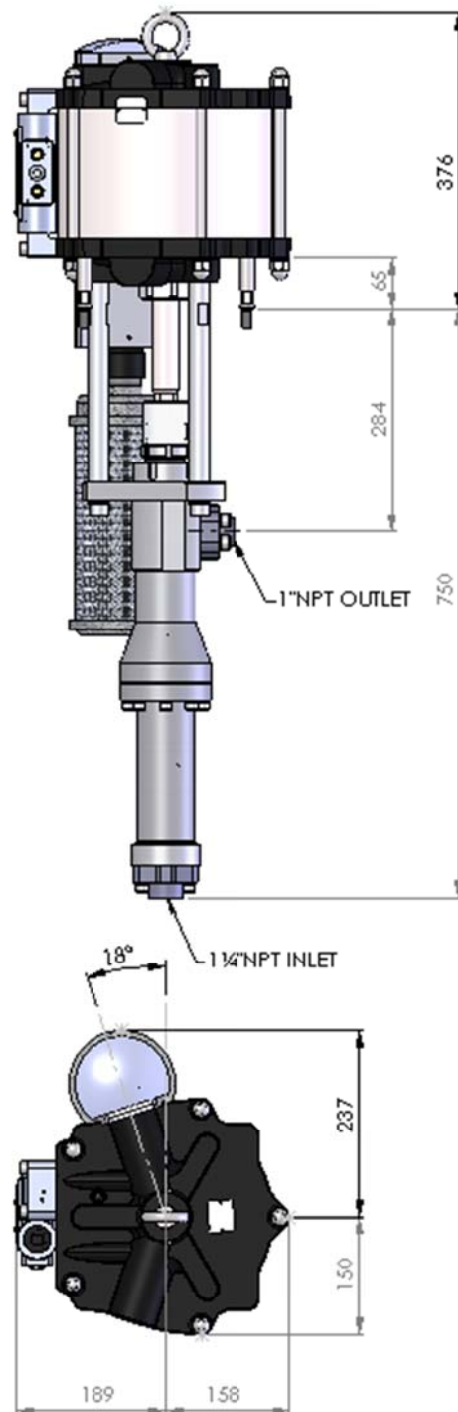
The Fluid section is usually supplied as a complete assembly with the required diameter air motor for the pump ratio necessary. Mounting details are therefore air motor dependant. The A260 air motor is illustrated.

Mount the pump securely and position the pump at a convenient height to allow for maintenance, visual observation, and periodic inspection.

The Pump Assembly must be connected to a suitable earth ground to ensure that there is no possibility of static build up.

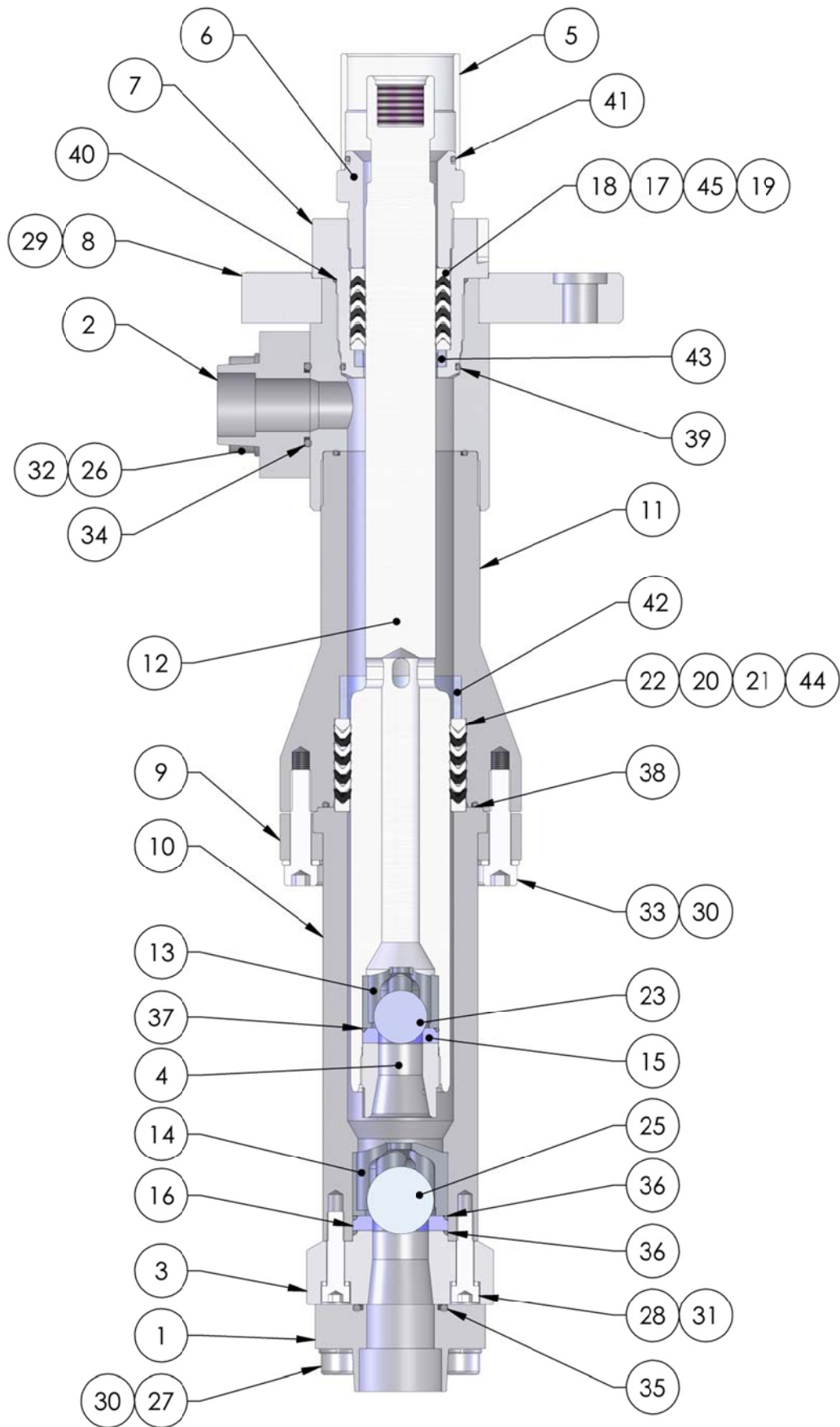
Attach suitable pipework or flexible hoses designed to meet the working pressure of the pump assembly (dependent on pump ratio) to the inlet and outlet connections, e.g. 1 1/4" Inlet and 1" Outlet.

For a 260 diameter air motor connect a suitable 1/2" NB air hose and 1/2" Pressure Filter Regulator to the air motor. (Filter rated at minimum 1000 L/min)



Set the pump speed to a slow cycle rate and start the pump to remove any air from the fluid circuit. Inspect for any air or fluid leaks.

Parts Lists – Section 4.1



Parts Lists – Section 4.1

Parts List – ‘220’ Fluid Section 104027 (Plasma Rod) Parts List – ‘220’ Fluid Section 104032 (Ceramic Rod)				
ITEM	PART No	DESCRIPTION	QTY	REMARKS
1	193033	1 1/4" NPT-1.25 SAE FLANGE 3000 PSI	1	
2	193031	1" NPT-1 SAE FLANGE 6000 PSI	1	
3	193022	BOTTOM CAGE RETAINER	1	
4	193021	UPPER SEAT RETAINER	1	
5	193020	SOLVENT CUP	1	
6	193019	PACKING NUT	1	
7	193018	UPPER PACKING RETAINER	1	
8	193017	MOUNTING FLANGE	1	
9	193016	FLANGE	1	
10	193015	LOWER TUBE	1	
11	193011	UPPER TUBE ASSEMBLY	1	
12	193010	PUMP SHAFT - NITRIDE	1	FOR 104027
12	193023	PUMP SHAFT - CERAMIC	1	FOR 104032
13	192948	BALL CAGE	1	
14	192947	BALL CAGE	1	
15	192942	BALL SEAT	1	
16	192941	BALL SEAT	1	
17	192937	CHEVRON (220U)	4	Black
18	192936	FEMALE SEAL RETAINER (220U)	1	
19	192935	MALE SEAL RETAINER (220U)	1	
20	192929	CHEVRON (220L 440U)	4	Black
21	192928	FEMALE SEAL RETAINER (220L 440U)	1	
22	192927	MALE SEAL RETAINER (220L 440U)	1	
23	192382	Ø25.4 BALL	1	
24	192147	LABEL	1	
25	171724	Ø1.25 ST ST BALL	1	

Parts Lists – Section 4.1

Parts List – ‘220’ Fluid Section 104027 (Plasma Rod) Parts List – ‘220’ Fluid Section 104032 (Ceramic Rod)				
ITEM	PART No	DESCRIPTION	QTY	REMARKS
26	165578	M12 x 45 CAP HD SCREW	4	
27	165566	M10 x 40 CAP HD SCREW	4	
28	165555	M8 x 35 CAP HD SCREW	6	
29	165544	M6 x 30 CAP HD SCREW	2	
30	165123	M10 SPRING WASHER	12	
31	165086	M8 SPRING WASHER	6	
32	165044	M12 SPRING WASHER	4	
33	164735	M10 x 45 CAP HD SCREW	8	
34	162726	Ø33 O-RING	1	
35	162725	Ø38 O-RING	1	
36	162724	Ø41 O-RING	2	
37	162723	Ø33 O-RING	1	
38	162722	Ø68 O-RING	1	
39	162721	Ø52 O-RING	1	
40	162720	Ø60 O-RING	1	
41	162719	Ø47.3 O-RING	1	
42	160515	BOTTOM PACKING SPRING	1	
43	160514	TOP PACKING SPRING	1	
44	193306	CHEVRON (220L – 440U) - PTFE	4	White
45	193304	CHEVRON (220U) – PTFE	4	White

Maintenance – Section 5.1

Dismantling Procedure –Fluid Section

1. Depressurise the pump completely. Remove the caphead screws on the inlet and outlet SAE flanges.
2. Separate the fluid section from the air motor, unscrew the shaft coupling and tie bars, support the pump assembly at all times.
3. Move fluid section to a working area with a bench vice.
4. Clamp the pump in the vice using the flats on the *upper tube assembly (11)*
5. Remove *solvent cup (5)* and '*O*' *ring (41)*
6. Using a 6mm Allen key, remove *bottom cage retainer (3)* *bottom seat (16)*, *ball (25)*, *ball cage (14)* and '*O*' *rings (36)*.
7. Using 8mm Allen key release the flange (9) to remove *lower tube (10)*
8. Remove the pump shaft assembly; this can be stripped down later.
9. Remove *lower packings (20)* and *retainers (21 & 22)* with *wave spring (42)*
10. Using a 60mm C-spanner remove *packing nut (6)*
11. Using a 83mm C-spanner remove upper packing retainer (7), and '*O*' *ring (39)*, *packings (17)*, *retainers (18 & 19)* with *wave spring (43)*
12. Remove the *upper tube assembly (11)* from the vice.
13. Mount the shaft assembly vertically in a vice and grip on the upper seat retainer (4). Using a 28 mm spanner on the top of the shaft loosen the assembly. Transfer the shaft assembly to the bench and remove retainer (4), seat (15), ball, (23), ball cage (13) and '*O*' rings
14. Dispose of all '*O*' rings and chevron packings.
15. Clean all remaining parts with solvent compatible to material being pumped, e.g. white spirit or similar.
16. Protect the shaft (12) if parts are to be stored for longer than one month they must be protected from corrosion.

Maintenance – Section 5.2

Assembly Procedure – Sub Assemblies

PUMP SHAFT BALL CHECK ASSEMBLY

1. Hold pump shaft (12) in a vice, grip on the flats.
2. Fit top ball cage (13), ball (23) 'O' ring (37) and seat (15) into shaft.
3. Lubricate the thread of the upper seat retainer (4) and screw into the shaft, tighten to 80 Nm.

LOWER TUBE INLET BALL CHECK ASSEMBLY

1. Slide flange (9) over lower tube (10)
2. Fit ball cage (14) ball (25) O-ring (36) seat (16) and O-ring (36) into lower tube.
3. Fit lower cage retainer (3), washers (31) and secure using cap screws (28), tighten to 30 Nm.

UPPER PACKING SET ASSEMBLY

1. Fit wave spring (43) packing male retainer (19) into upper packing retainer (7). Lubricate the bore with compatible grease and fit 8 off chevron packings (4 off 17 & 4 off 45) then fit packing female retainer (18).
2. Lubricate the thread of the packing nut (6) with compatible grease and fit into the packing retainer (7), hand tighten only.
3. Fit 'O' rings (39 & 40) to packing retainer (7).

Maintenance – Section 5.2**Assembly Procedure - FLUID SECTION FINAL ASSEMBLY**

1. Hold the upper tube assembly (11) in a vice with the flats on the tube. Note the mounting flange (8) should already be attached to the upper tube assembly.
2. Fit the built upper packing assembly; lubricate the thread and O-ring with compatible grease to assist assembly. Tighten with 'C' spanner.
3. Fit wave spring (42) packing male retainer (22) Lubricate the bore of the tube assembly locally with compatible grease and fit 8 off chevron packings (4 off 20 & 4 off 44) then fit packing female retainer (21).
4. Insert the built pump shaft assembly through the upper and lower packing until approximately 100 mm of shaft protrudes out of the fluid section.
5. Fit O-ring (38) to the end of upper tube assembly and fit the lower tube assembly over the pump shaft and secure the flange (9) with cap screws (33) and washers (30) tighten to 50 Nm.
6. Fit inlet flange (1) O-ring (33) and secure with cap screw (27) & washer (30) tighten to 50 Nm.
7. Fit outlet flange (2) O-ring (32) and secure with cap screw (26) & washer (32) tighten to 60 Nm.
8. Tighten upper packings with 'C' spanner to approximately 50 Nm
9. Fit solvent cup (5) and O-ring (41)

Maintenance – Section 5.3 - Operational

Preventative Maintenance - Pump Paint Packings

Check daily to ensure that there is the correct type of lubricant material present in the solvent cup; this should be compatible with the material being pumped. Confirmation from the material supplier should be sought to ensure compatibility to prevent the risk of contamination.

A universal lubricant is available - Wet Sol 'Plus' Binks Part Number 863009

Check daily for excessive material leaks into the solvent cup.

Upper Packing Adjustment

1. Stop the Pump and isolate the air motor air supply.
2. Relieve all fluid pressure from the pump.
3. Clean the solvent cup to remove excess leaked material.
4. Use the 'C' spanner to tighten the packing nut (6) and preload the chevron packing , approximate torque 50Nm
5. Add a compatible lubricant to the solvent cup (5)

Upper Packing Replacement

1. Stop the Pump at the bottom stroke position.
2. Relieve all fluid pressure from the pump.
3. Disconnect fluid section to air motor coupling.
4. Carefully Start the air motor with reduced air pressure and stop at the top stroke position. Isolate the air supply to the air motor.
5. Remove the solvent cup.
6. Use 'C' spanners to remove the packing nut (6) from the packing retainer.
7. Use the 'C' spanner to remove the upper packing retainer (7)
8. Remove all parts and clean using compatible solvent, discard the 8 off chevron packings.
9. Refit wave spring (43) packing male retainer (19) into upper packing retainer (7). Lubricate the bore with compatible grease and fit 8 off new chevron packings (4 off 17 & 4 off 45) then fit the packing female retainer (18).
10. Lubricate the thread of the packing nut (6) with compatible grease and fit into the packing retainer (7), hand tighten only.
11. Refit the packing assembly onto the fluid section and tighten with 'C' spanner.
12. Use the 'C' spanner to tighten the packing nut (6) and preload the chevron packing, approximate torque 50Nm.
13. Refit the solvent cup.
14. Carefully drive the air motor shaft down towards the fluid section.
15. Couple the air motor to the fluid section.

Maintenance Fault Finding – Section 5.4

Problem	Cause	Action
Leak from rod seal packings	Seal wear or damage to packing material	Stop the pump and relieve all material pressure. Tighten the gland nut until the resistance of the packings clamping the shaft can be felt. Do not over-tighten. Ensure solvent cup has the correct lubricant for the material being pumped present at all times.
	Damaged rod	Replace
Low material flowrate, pump running fast or will not stall (stalling - 1 stroke should not occur in less than 30 seconds)	Contaminates trapped between ball and seat	Strip and clean pump. Check for damage
	Worn or damaged balls/seats	Check for wear; replace balls and / or seats.
	Worn bottom rod seals	Replace
Air entering system	Loose joint on suction side	Check and reseal fittings

Preventative Maintenance - Pump Paint Packings

Check daily to ensure that there is the correct type of lubricant material present in the solvent cup; this should be compatible with the material being pumped. Confirmation from the material supplier should be sought to ensure compatibility to prevent the risk of contamination.

A universal lubricant is available - Wet Sol 'Plus' Binks Part Number 863009

Check daily for excessive material leaks into the solvent cup

Spare Parts List – Section 6.1

Spare Parts Kit - 250640				
ITEM	PART No	DESCRIPTION	QTY	REMARKS
17	192937	CHEVRON (220U)	4	
20	192929	CHEVRON (440U 220L)	4	
34	162726	Ø33 O-RING	1	
35	162725	Ø38 O-RING	1	
36	162724	Ø41 O-RING	2	
37	162723	Ø33 O-RING	1	
38	162722	Ø68 O-RING	1	
39	162721	Ø52 O-RING	1	
40	162720	Ø60 O-RING	1	
41	162719	Ø47.3 O-RING	1	
44	193306	CHEVRON (220L – 440U) - PTFE	4	
45	193304	CHEVRON (220U) – PTFE	4	

Accessories		
PART No	DESCRIPTION	REMARKS
193041	Air Motor Connection Kit B10LI	Kit for mounting Air Motor to Fluid Section includes:- Tie Rods, Air Motor Coupling and Cap Head Screws.
193042	Air Motor Connection Kit A260	
193043	‘C’ Spanner [60 mm]	Fluid Packing Adjustment [6]
193044	‘C’ Spanner [83 mm]	Packing Retainer [7]



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