BINKS

Instruction Manual

High Pressure Regulator

- **Regulator (Air Pilot) - 107906**

HP Back Pressure Regulator

- **B P Valve (Air Pilot) - 107908**

Finishing Brands.
DeVILBISS Ransburg BGK BINKS

Product Description

BPR - 107757, 107758, 107748, 107749, 107750, 107754, 107755, PRV22, 107906, 107908

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

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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Section

General Description – Section 1.1

The Binks range of high pressure regulators and back pressure regulators give complete control for viscous and heavy materials. They are suitable for use with all solvent and waterbased paints, mastics and sealers. All wetted parts are stainless steel with PTFE seals and tungsten carbide seats. The rugged construction gives long maintenance free life.

The units have high flow characteristic by incorporation of large flow regulating orifice with 3/4" NPT connection ports, this enables use for systems or single operator ‘take offs’.

The Tungsten carbide seats allow for long maintenance free operation, unique shaft seal design incorporating a ‘wiper lip’ preventing ingress of material filler particles into the sealing area reducing shaft and seal wear. The PTFE shaft seal is impregnated for increased life.

The Simple construction gives ease of maintenance and installation.

Fluid Regulators and Back pressure regulators are available as air pilot operated versions, which prevents the need for large spanners when changing required pressures.

Operation – Section 1.2

Regulator

The regulator will maintain the pressure of a fluid at the outlet port to that set by the operator providing the inlet is at a higher pressure.

The regulated fluid pressure is set by an air pressure on the diaphragm, the force created moves the plunger causing the needle to push the ball of its seat and allow material to flow to the outlet.

Material will continue to flow until pressure in the outlet port builds up to such a pressure that it's force when acting on the plunger area overcomes that of the diaphragm, this will move the plunger in the opposite direction and allow the seat to close.

It will remain in this state until the pressure in the outlet port drops and again allows the plunger and needle to push the ball from its seat. This procedure repeats continually balancing the pressure to that set by the operator

The outlet fluid pressure is directly proportional to the air pressure applied to the diaphragm.

Back pressure Regulator

The back pressure regulator will maintain the upstream pressure of a system at its inlet port to that set by the operator. Should the pressure begin to exceed the set pressure the valve will relieve sufficient material to maintain the set back pressure.

The fluid back pressure is set by an air pressure on the diaphragm. The force created moves the plunger causing the seat to close and will remain in this state until fluid entering the inlet port reaches a pressure whereby its force when acting on the plunger area overcomes that of the diaphragm or spring. This moves the plunger in the opposite direction and allows the fluid to pass to the outlet port.

This will cause the fluid pressure in the inlet port to drop until the diaphragm force closes the seat; this procedure continually balances the two forces maintaining the set pressure.
The inlet system pressure is directly proportional to the air pressure applied to the diaphragm.

Specification – Section 1.3

Feature	Regulator / BPR
Outlet regulating pressure	500 – 3500 psi 35 – 240 bar
Operating air pressure pilot range	10 – 80 psi 0.7 – 5.5 bar
Maximum Inlet Pressure	5100 psi 350 bar
Connections	Material Inlet – ¾" NPT Material Outlet – ¾" NPT Material Gauge Port – ¼" NPT x 2 Air Pilot –1/8" x 4mm 'Push in'
Weight	15 Pounds 6.8 Kg
Wetted parts	Stainless Steel PTFE Tungsten Carbide
Operating Parts	Hard anodised aluminium (body) PTFE / Rubber (diaphragm) Spring steel Steel

Important Information - Section 2.2

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

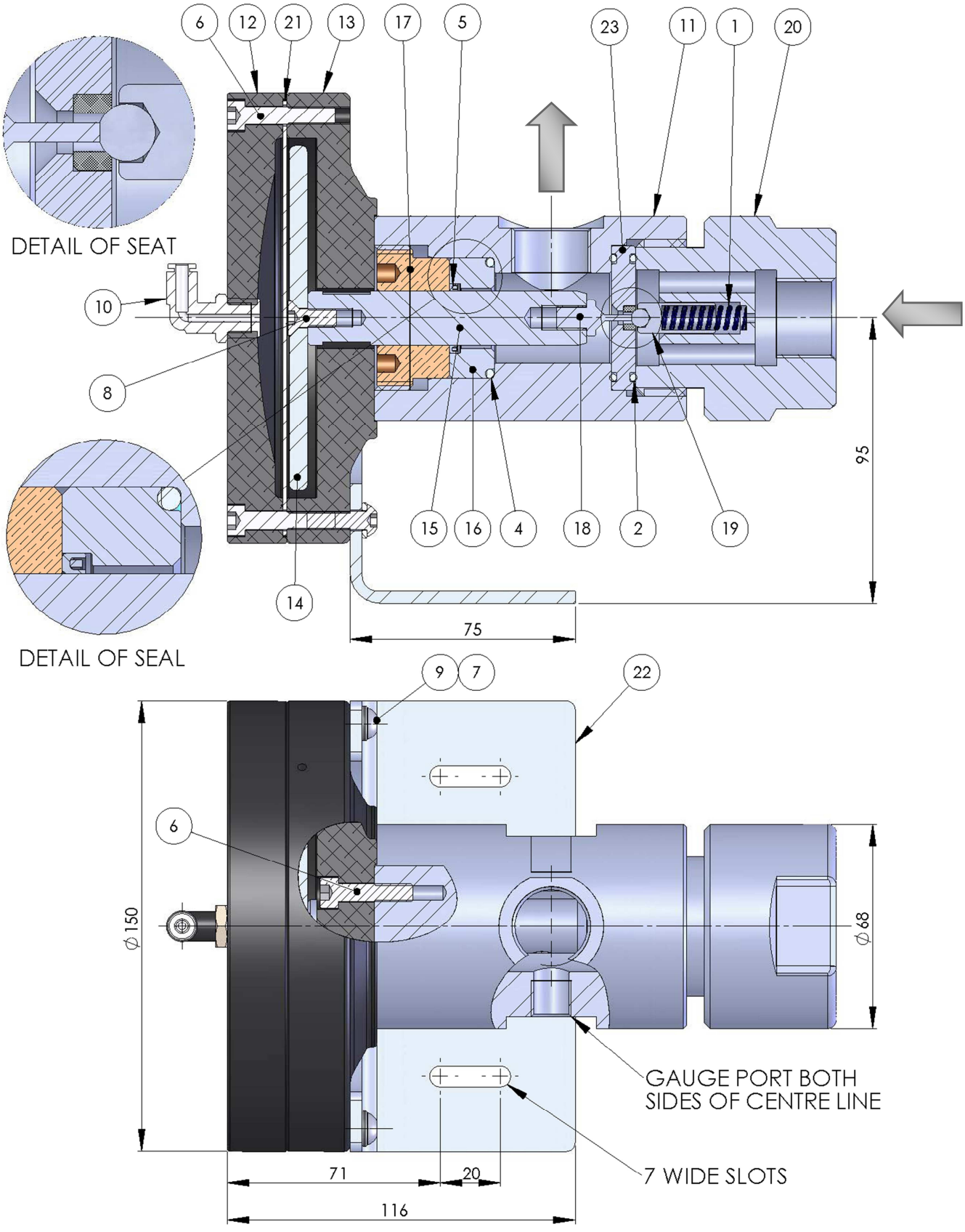
High pressure equipment can be dangerous if used incorrectly, serious bodily injury may occur if the following instructions are ignored. Installation and maintenance should only be carried out by suitably qualified personnel.

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
6. Always ensure equipment is suitably earthed before running, to avoid any chance of electrostatic build up.

Parts List and Drawings – Section 3.1

Parts List - 10 79 06 REGULATOR (Air Pilot)				
Item	**Part No.**	**Description**	**Qty**	**Remarks**
1	16 03 79	SPRING	1	#
2	16 14 59	O RING PTFE	2	#
3				
4	16 14 61	O RING PTFE	1	#
5	16 25 86	SPRING ENERGISED LIP SEAL	1	#
6	16 47 06	M6 CAPSCREW	16	
7	16 50 87	SPRING WASHER	3	
8	16 47 36	M6 COUNTERSUNK SCREW	1	#
9	16 59 17	PAN HEAD SET SCREW	3	
10	17 46 47	1/8" – 4MM STUD ELBOW	1	
11	19 11 85	BODY	1	
12	19 11 86	TOP COVER	1	
13	19 11 87	DIAPHRAGM FLANGE	1	
14	19 11 88	SUPPORT PLATE	1	
15	19 11 89	PLUNGER	1	#
16	19 11 90	SEAL HOUSING	1	
17	19 11 91	SEAL RETAINER	1	#
18	19 11 92	NEEDLE	1	#
19	19 11 95	BALL & SLEEVE ASSY	1	#
20	19 11 97	RETAINING NUT	1	
21	19 11 98	DIAPHRAGM	1	#
22	19 12 12	MOUNTING BRACKET	1	
23	19 20 53	SEAT ASSEMBLY	1	#

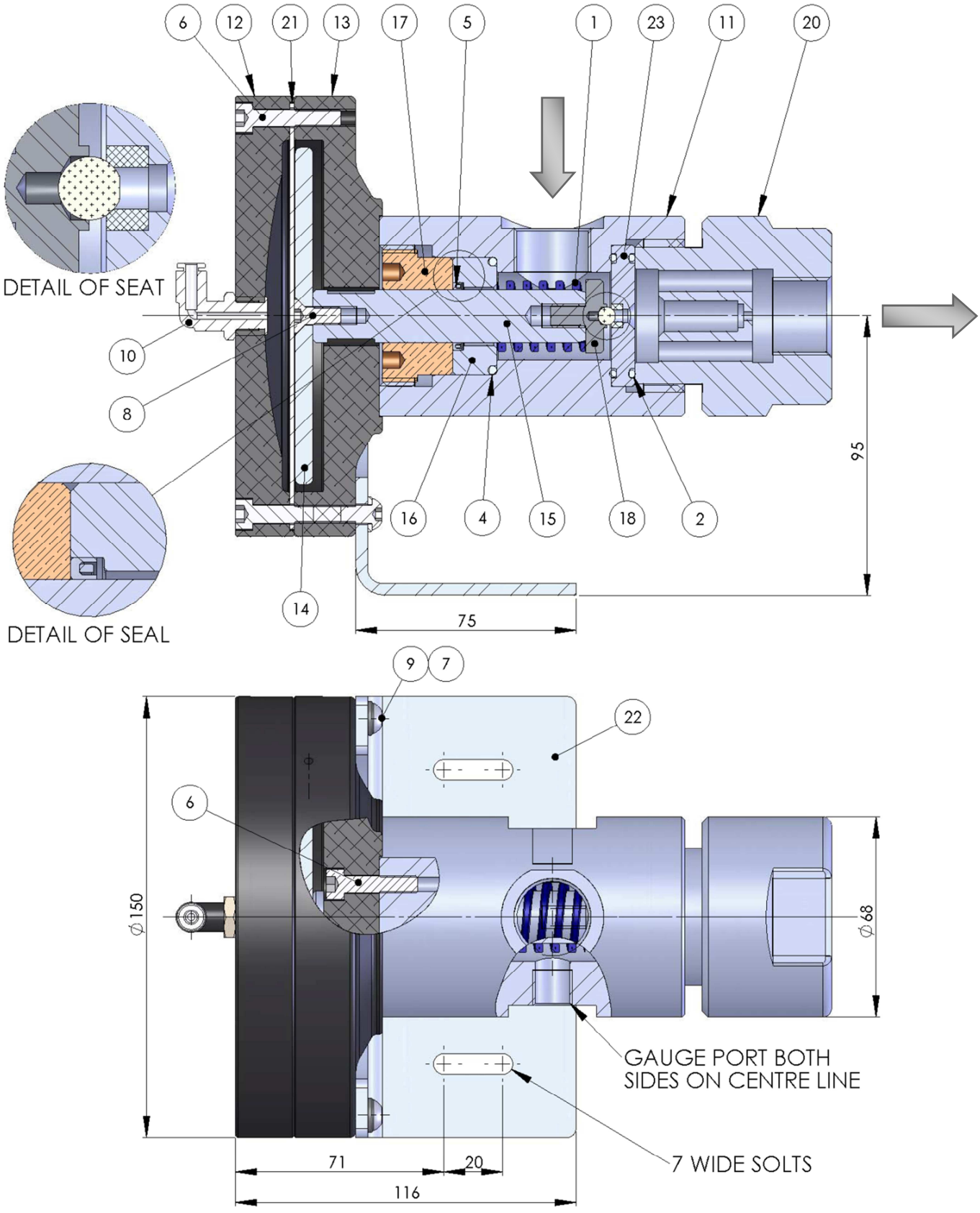
Parts List and Drawings – Section 3.1-107906 Regulator



Parts List and Drawings – Section 3.1

Parts List - 10 79 08 BPR (Air Pilot)				
Item	**Part No.**	**Description**	**Qty**	**Remarks**
1	16 03 81	SPRING	1	#
2	16 14 59	O RING PTFE	2	#
3				
4	16 14 61	O RING PTFE	1	#
5	16 25 86	SPRING ENERGISED LIP SEAL	1	#
6	16 47 06	M6 CAPSCREW	16	
7	16 50 87	SPRING WASHER	3	
8	16 47 36	M6 COUNTERSUNK SCREW	1	#
9	16 59 17	M6 PANHEAD SCREW	3	
10	17 46 47	1/8" - 4MM STUD ELBOW	1	
11	19 11 85	BODY	1	
12	19 11 86	TOP COVER	1	
13	19 11 87	DIAPHRAGM FLANGE	1	
14	19 11 88	SUPPORT PLATE	1	
15	19 11 89	PLUNGER	1	#
16	19 11 90	SEAL HOUSING	1	
17	19 11 91	SEAL RETAINER	1	#
18	19 12 37	PLUNGER ASSEMBLY	1	#
19				
20	19 11 97	RETAINING NUT	1	
21	19 11 98	DIAPHRAGM	1	#
22	19 12 12	MOUNTING BRACKET	1	
23	19 20 53	SEAT ASSEMBLY	1	#

Parts List and Drawings – Section 3.1-107908 BPR



Maintenance – Section 3.2

The Maintenance requirements for the fluid regulator and back pressure regulator are minimal due to the small number of moving parts and simple construction of the unit.

Wear of the main components will is largely dependent on the pressure, flow and nature of the material passing through the unit. It is therefore normal to maintain the unit when a fault appears or at base intervals based on experience.
It is recommended that maintenance to be undertaken at yearly intervals, unless the nature of the material being used requires a more frequent maintenance period.

Early failure can be detected by monitoring the operation of the unit with the checks below: -

- Air or fluid leaks from bleed holes in diaphragm flange.
- Changes in unit characteristics (providing working constraints remain constant) i.e. constant adjustment required to maintain the same system settings.
- System pressure constantly fluctuates with material flow.

Checking for wear

Once the unit is dismantled check the following areas for wear:-

Ball & sleeve assembly -	Wear on ball and excessive scoring on sleeve
Seat	Sealing edge should be square (regulator) Scoring/wear on face(BPR)
Sealing plug	Scoring/wear on face
Plunger	Scoring on outside diameter
Seal retainer	Scoring in bore
Diaphragm	Cracking and delamination

Maintenance – Section 3.2

Cleaning

Never immerse the whole unit in solvent or cleaning fluid. Once dismantled the fluid end stainless steel parts may be soaked in cleaning fluid except the ball and sleeve assembly.

Clean all parts only with a solvent rag or stainless steel parts with a soft brush. Never use sharp object for cleaning the unit as smooth sealing surfaces may be damaged.

Replacement of parts

When replacing parts it is recommended that all parts contained in the spare parts kit are replaced at the same time, giving consistent life between maintenance cycles.

Maintenance – Section 3.2

10 79 06 Regulator - air operated

Dismantling: -

1. Remove unit from pipework noting high pressure warning (section 2.2)
2. Unscrew 8 cap head screws to remove top cover.
3. Remove diaphragm.
4. Pull out support plate, plunger & needle assembly.
5. Unscrew 8 cap head screws and remove diaphragm flange.
6. Unscrew seal retainer.
7. Remove seal housing complete with seal and 0-ring
8. Unscrew retaining nut.
9. Remove ball & sleeve and spring from retaining nut
10. Remove seat holder, seat and o-rings from body.

Reassembly: -

Reverse the above procedure, always fit new o-rings and lip seal
When assembling 191185 Body with 191187 Diaphragm Flange ensure the outlet port of body aligns with centre tapped hole of any group of three holes around 191187 flange. (To enable correct bracket alignment)
Always ensure PTFE side of diaphragm 191198 is against 191188 plate.

Maintenance – Section 3.2

10 79 08 BPR air operated

Dismantling: -

1. Remove unit from pipework noting high pressure warning (section 2.1).
2. Unscrew 8 cap head screws to remove top cover.
3. Remove diaphragm.
4. Unscrew retaining nut.
5. Remove seat holder, seat and o-rings from body.
6. Unscrew sock head countersunk screw to remove support plate, whilst preventing the plunger rotating.
7. Remove plunger, plunger cap, sealing plug and spring from body.
8. Unscrew seal retainer.
9. Remove seal housing complete with seal and 0-ring.

Reassembly:-

Reverse the above procedure, always fit new o-rings and lip seal
When assembling 191185 Body with 191187 Diaphragm Flange ensure the outlet port of body aligns with centre tapped hole of any group of three holes around 191187 flange. (To enable correct bracket alignment)
Always ensure PTFE side of diaphragm 191198 is against 191188 plate.

Fault Finding – Section 3.3

Problem	Cause	Action
Poor or Fluctuating regulation	Worn seats	Replace seats
	Damaged Diaphragm	Replace diaphragm
	Leaking plunger seal	Replace plunger and seal
	Broken spring (fluid end)	Replace spring
	Air supply to air pilot fluctuating	Check and rectify air regulation
Air leaking from diaphragm flange	Damaged diaphragm	Replace diaphragm
Fluid leaking from diaphragm flange	Worn plunger / seal	Replace plunger and seal
	Damaged o-ring in seal housing	Replace o-ring
Fluid leaking from body and retaining nut joint	Damaged o-rings	Replace o-rings

Spare Parts List – Section 3.4

# 25 04 52 Spare Parts List - 10 79 06 Regulator (Air Pilot)				
Item	**Part No.**	**Description**	**Qty**	**Remarks**
A	16 03 79	SPRING	1	(1)
B	16 14 59	O RING PTFE	2	(2)
C	16 14 61	O RING PTFE	1	(4)
D	16 25 86	SPRING ENERGISED LIP SEAL	1	(5)
E	16 47 36	SOCK HEAD C/SK SCREW	1	(8)
F	19 11 89	PLUNGER	1	(15)
G	19 11 91	SEAL RETAINER	1	(17)
H	19 11 92	NEEDLE	1	(18)
I	19 11 95	BALL & SLEEVE ASSY	1	(19)
J	19 11 98	DIAPHRAGM	1	(21)
K	19 20 53	SEAT ASSEMBLY	1	(23)

# 25 04 54 Spare Parts List - 10 79 08 BPR (Air Pilot)				
Item	**Part No.**	**Description**	**Qty**	**Remarks**
A	16 03 81	SPRING	1	(1)
B	16 14 59	O RING PTFE	2	(2)
C	16 14 61	O RING PTFE	1	(4)
D	16 25 86	SPRING ENERGISED LIP SEAL	1	(5)
E	16 57 36	SOCK HEAD C/SK SCREW	1	(8)
F	19 11 89	PLUNGER	1	(14)
G	19 11 91	SEAL RETAINER	1	(16)
H	19 11 98	DIAPHRAGM	1	(17)
I	19 12 37	PLUNGER CAP	1	(21)
J	19 20 53	SEAT ASSEMBLY	1	(23)

Accessories – Section 3.5

Accessories			
Item	**Part No.**	**Description**	**Remarks**
1	10 74 93	¼" BSP Pilot Air Regulator	
2	16 71 84	¼" BSP 0-150 psi Pressure Gauge	
3	16 71 43	¼" NPT Pressure gauge 0-5000 psi	

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