



SWITCH BLOCK VALVE

AP0281, AP0281/G and AP0281/PS



OWNER AND MAINTENANCE MANUAL

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AMENDMENTS RECORD:

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Change No.	Change Request No.	Description & Comments:	Change Date	New Issue No.	Changed By:	Approved By:
1	1454	Teeth removed from parts AP3052 + AP3060	16/07/2015	2	CT	LH
2	1442	Spring AP4012 added to Switch Block. Retaining Nut AP8021 modified to accommodate new spring.	16/07/2015	2	CT	LH

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Commercial Switch Block
Owners and Maintenance Manual

(16/07/2015 Issue 2)

INTRODUCTION

This manual provides factory prescribed procedures for the correct use, installation and maintenance of the Apeks AP0281, AP0281/PS and AP0281/G Switch Blocks.

GENERAL GUIDELINES

1. In order to correctly perform the procedures outlined in this manual, it is important to follow each step exactly in the order given. Read over the entire manual to become familiar with all procedures and to learn which specialty tools and replacement parts will be required before commencing disassembly. Keep the manual open beside you for reference while performing each procedure. Do not rely on memory.
2. All service and repair should be carried out in a work area specifically set up and equipped for the task. Adequate lighting, cleanliness and easy access to all required tools are essential for an efficient repair facility.
3. Before beginning any disassembly, it is important to first perform the initial inspection procedure. Refer to **Table 1 -Troubleshooting Guide** in the back of the manual, to determine the possible cause of any symptoms which may be present.
4. As each unit is disassembled, reusable components should be segregated and not allowed to intermix with non-reusable parts or parts from other units. Delicate parts, including valve shaft and valve seats which contain critical sealing surfaces, must be protected and isolated from other parts to prevent damage during the cleaning procedure.
5. Use only genuine Apeks parts provided in the service kit.
6. Do not attempt to reuse mandatory replacement parts under any circumstances, regardless of the amount of use the product has received since it was manufactured or last serviced.
7. When reassembling, it is important to follow every torque specification prescribed in this manual, using a calibrated Newton Meter torque wrench. Most parts are made of either marine brass or plastic, and can be permanently damaged by undue stress.

WARNINGS, CAUTIONS & NOTES

Pay special attention to information provided in warnings, cautions, and notes that are accompanied by one of these symbols:



WARNINGS indicate a procedure or situation that may result in serious injury or death if instructions are not followed correctly.



CAUTIONS indicate any situation or technique that will result in potential damage to the product, or render the product unsafe if instructions are not followed correctly.



NOTES are used to emphasise important points, tips, and reminders.

SCHEDULED SERVICE

It is recommended that the Apeks Switch Block should be examined annually regardless of useage.

A full service should be performed every two (2) years.

With heavy use in contaminated water it is recommended to service the Switch Block Valve more regularly. In some contaminated water it may be preferable to replace the seals after every use and this should be determined via risk assessment.

! WARNING: This manual provides essential instructions for the proper setup, inspection, use and care of your new switch block. It is very important to take time to read these instructions in order to understand and fully utilize the function and safety features of the Apeks Switch Block. Improper use of your switch block could result in serious injury or death.

SAFETY INFORMATION

Before using this Switch Block, you must receive instruction and certification in surface supplied full face mask/helmet diving from a recognised training agency. Use of this equipment by uncertified or untrained persons is dangerous and can result in injury or death.

! WARNING!

- Do not dive with a surface umbilical gas supplied full face mask or helmet without a bailout/emergency gas supply.
- The umbilical gas supply system must be equipped with a non-return valve (check valve). This is to prevent a “squeeze” and possible catastrophic loss of the divers breathing air should the surface umbilical supply fail. Without this valve the diver will suffer serious injury or death.
- The bailout supply first stage regulator must be fitted with a pressure relief valve in a **LOW PRESSURE** port.

Description

The Apeks Switch Block can be used with any diving full face mask or helmet with a Medium Pressure (i.e. less than 16 bar / 232 psi) air supply.

The switch block allows the diver to switch from the primary air supply to an alternate bailout air supply (or Emergency Gas Supply - EGS), in case of failure of the primary supply. The primary supply may be a surface-supply umbilical or SCUBA cylinder.

The switch block is attached to the divers's harness in an easily accessible location so the diver can open the Switch Block valve unaided and in nil visibility conditions.

The AP0281/G Switch Block only has been CE certified by DNV-GL Det Norske Veritas-Germanischer Lloyd SE, Brooktorkai 18, 20457 Hamburg, Germany Notified Body number 0098 and has been found to be in accordance with the requirements of Council Directive 89/686/EEC. When examined the product satisfied the requirements of the manufacturer's technical specifications (based upon BS EN 15333 requirements), which has been previously assessed and deemed to meet the basic health and safety requirements (Annex II) of the directive.

The CE certified depth of 50 m (165 ft) is a standard maximum certification depth for diving equipment that is used to provide a uniform benchmark for measuring performance.

Apeks Switch Block is available in 3 versions/configurations;

1. AP0281/G - For use with the Aqua Lung (Gorski) G3000SS diving helmet. See Note.
2. AP0281 - For use with other full face masks and diving helmets. This general use version has a non-return check valve (i.e one way valve) and various inlet adapters for use with a primary air supply (e.g. surface-supply umbilical gas hose or cylinder).
3. AP0281/PS - For Public Safety diving. It is the same as the AP0281 but with a single, commonly used inlet adapter.

 **NOTE:** The main difference is the non-return check valve (AP3057) is not fitted to the AP0281/G configuration because it is fitted to the Aqua Lung G3000SS Diving Helmet.

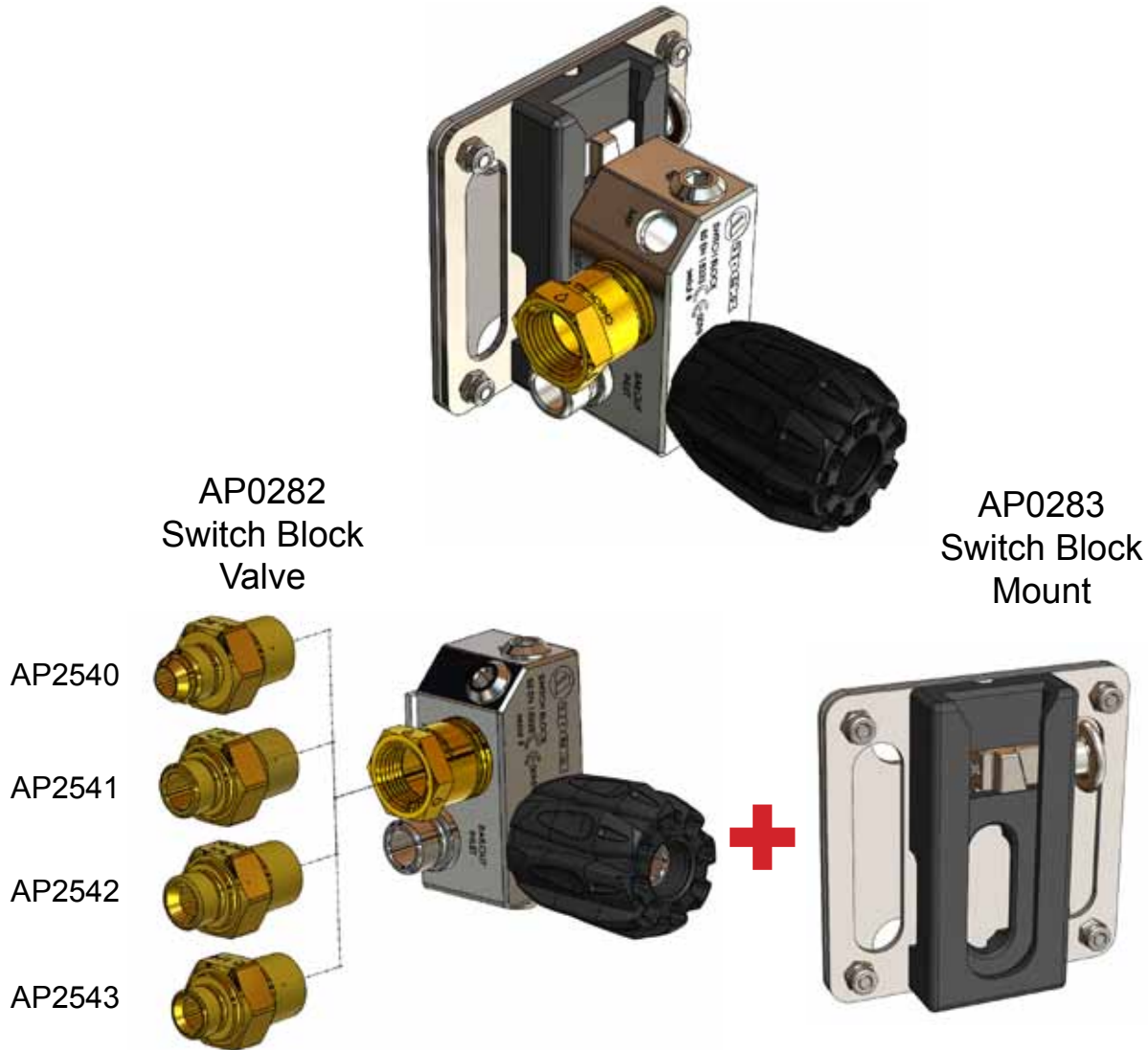
Switch Block operating configurations are shown on pages 11 to 14.

An optional Flow Restrictor (AP0730) is available for use whenever a suit inflator hose is fitted to one of the Switch Block MP outlet ports.



 **WARNING:** An in-line flow restrictor must be used with a suit inflator hose in order to reduce the escaping air flow (and to preserve the divers's breathing air supply) in the event of inflator hose malfunction.

AP0281 Switch Block Comprises of



1 x Bailout inlet port with 3/8" hose adaptor (male)

4 x Standard 3/8" outlet ports

1 x 1/2" NPT port - this is a dual use port:

- Inlet for primary air supply, using check valve and inlet adapter (version AP0281)

+ 4 x inlet adapters:

AP2540 - 3/8" NPT 18-6JIC

AP2541 - 3/8" NPT 18-9/16" (i.e. SCUBA MP hose fitting)

AP2542 - 3/8" NPT 18-9/16O2

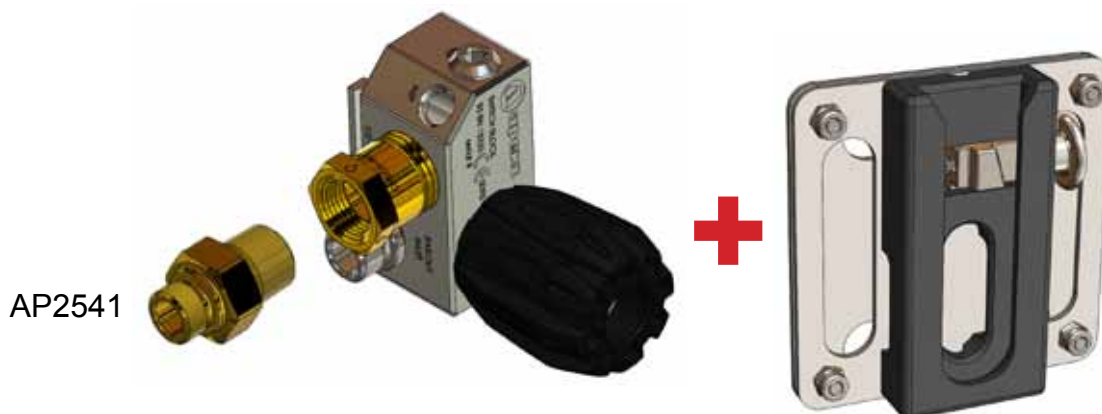
AP2543 - 3/8" NPT 18-G1/4"

AP0281/PS Switch Block Comprises of



AP0282
Switch Block
Valve

AP0283
Switch Block
Mount



AP2541

- 1 x Bailout inlet port with 3/8" hose adaptor (male)
- 4 x Standard 3/8" outlet ports
- 1 x 1/2" NPT port - this is a dual use port:
 - Inlet for primary air supply, using check valve and inlet adapter (version AP0281)
 - + 1 x inlet adapter:
 - AP2541 - 3/8" NPT 18-9/16" (i.e. SCUBA MP hose fitting)

AP0281/G Switch Block Comprises of



- 1 x Bailout inlet port with 3/8" hose adaptor (male)
- 4 x Standard 3/8" outlet ports
- 1 x 1/2" NPT port - this is a dual use port:
 - Outlet for bailout supply, using MP hose (version AP0281/G)

 **NOTE:** The main difference is the non-return check valve (AP3057) is not fitted to the AP0281/G configuration because it is fitted to the Aqua Lung G3000SS Diving Helmet.

AP0283 Switch Block Mount Fitting

The Switch Block Mount is designed to fit onto most harnesses. Thread the end of the webbing through one of the slots in the mounting plate then through the other. Slide the back plate to the desired position in either position 1 or 2 as the preferred position in commercial diving is on the right hand side. Bolt the back plate to the underside of the Switch Block Mount. Lock it in position by hand tightening the bolts using a 2.5mm allen key and a 7mm spanner.

To assemble to a vertical strap align the slots horizontally on the back plate and thread through back plate before bolting together.

H3 DIVING HARNESS, PN 400800



Mounting locations for Switch Block



The Apeks Switch Block is easily removable from the Switch Block Mount. This enables the Switch Block to be removed from the harness after completion of diving while leaving the Switch Block Mount fixed in place on the harness. During use the Switch Block is retained in place by means of a spring loaded button catch on the mounting plate.

Switch Block Valve Setup

1. Attach supply hoses relative to which configuration you are using to 5Nm (44in.lbs) of torque.
2. Use umbilical supply adapter suited to the fitting on supply hose.
3. Slide the switch block into place. Move the switch block up and down to ensure that it is held securely in place.

 **NOTE:** The Switch Block will only fit into Switch Block Mount one way.

 **NOTE:** All outlet ports are 3/8" UNF - 24 thread.

 **NOTE:** The Switch Block can be checked to ensure the valve seals (refer to page 15).

 **WARNING:** If the bailout valve leaks, gas will empty from the bailout cylinder leaving no air for the diver in an emergency situation.

Operation

Pre-Dive Check

- Ensure the appropriate hoses are attached as shown in the configuration section (pages 9&10), and Switch Block and Mount is secure.

 **CAUTION:** Ensure the bailout first stage regulator is set between 9.0-10.0 bar (130-145 psi).

- Close the Switch Block valve by turning the hand wheel clockwise until it stops hand tight.

 **CAUTION:** Do not overtighten the hand wheel, this may damage the valve seal and/or seat and the Switch Block will have to be serviced or even discarded.

- Open the bailout cylinder valve and isolate the surface supply.
- Open the Switch Block valve briefly and listen for the flow of gas. If no gas flow is heard, check the cylinder valve is open and/or the hoses for blockages. If there is still no gas flow, remove the Switch Block and bailout gas system and have it serviced or replaced.

Diving

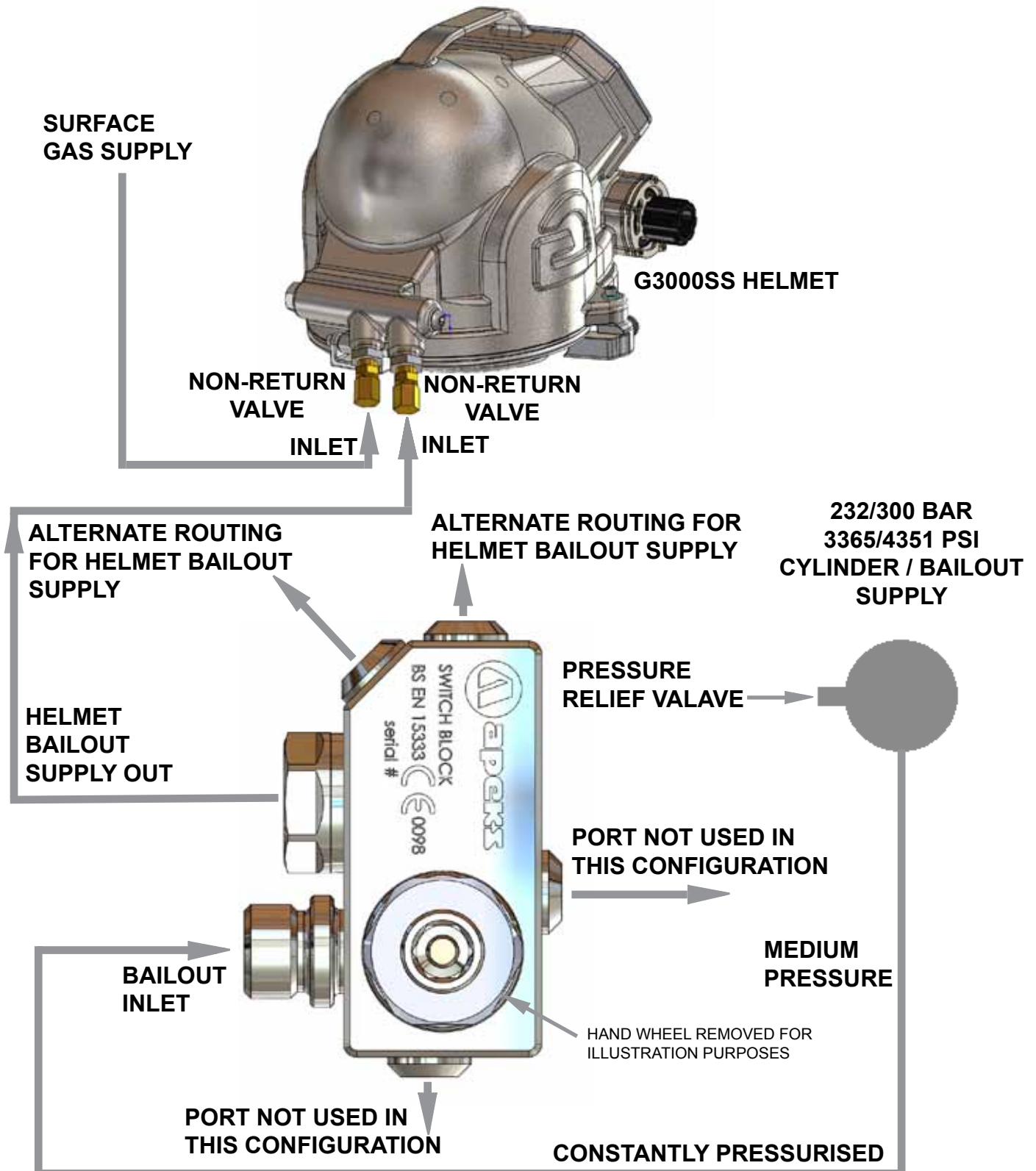
- In case of umbilical air supply failure, open Switch Block valve fully by turning the hand wheel anticlockwise until it stops.

 **WARNING:** The bailout cylinder only allows the diver a few minutes of air and he must immediately return to the surface or to a place of safety.

 **NOTE:** Close Switch Block valve when not in use.

 **CAUTION:** Always keep the bailout hose pressurised after test and make sure the bailout switch is closed.

Configuration of AP0281/G Switch Block, G3000SS



Configuration of AP0281/G Switch Block, G3000SS

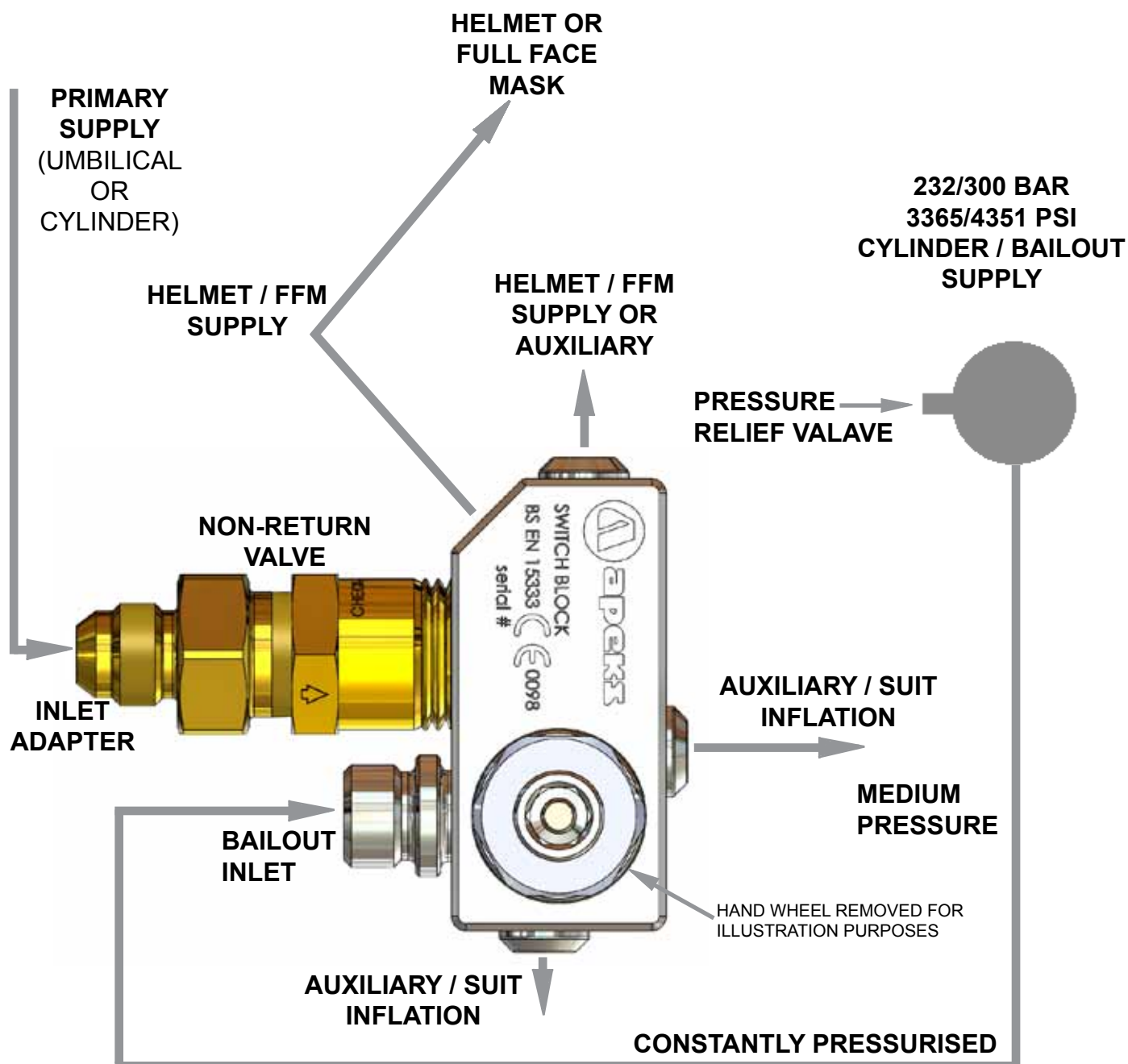


 **NOTE:** These images were taken prior to the Switch Block Mount modification. The images are for demonstration purposes only and all new Mount's will not have teeth on the plates.

AP0281/G Switch Block used in bailout configuration with Aqua Lung (Gorski) G3000SS Diving Helmet. Mounted on Aqua Lung H3 Diving Harness. Diver wearing Aqua Lung HAZMAT dry suit.



Configuration of AP0281 and AP0281/PS Switch Block



 **NOTE:** The AP0281 + AP0281/PS have not received CE certification

Configuration of AP0281 and AP0281/PS Switch Block



AP0281 (also AP0281/PS) Switch Block used with FFM in lightweight surface-supply configuration with umbilical primary air supply and bailout cylinder. Mounted on Aqua Lung H3 Diving Harness. Diver wearing Aqua Lung HAZMAT dry suit.



NOTE: These images were taken prior to the Switch Block Mount modification. The images are for demonstration purposes only and all new Mount's will not have teeth on the plates.



Cleaning

- Remove Switch Block valve from the harness mounting.
- Wash both valve and harness with clean water, use warm water if possible if diving in water +5°C or less. Ensure all dirt and debris has been removed from in and around the spring and button on the harness mounting and under the valve Switch Block hand wheel.
- Check that the hand wheel turns smoothly and free.
- Check the button on the harness mounting operates smoothly. Clean again if necessary.

Inspection

Inspect the rubber parts, plastic parts and non-return valves at regular intervals and have them replaced if there are any signs of damage or wear. See page 2 for scheduled service details.

Storage

The Switch Block should be dried and stored in a cool and dry location. All service parts including rubber and plastic components should be stored in a sealed bag in a cool, dry and dark location.

Warranty Information

- Apeks warrants to the original purchaser that the product will remain free from defects in material and workmanship throughout its useful life, provided that it receives normal use, proper care and prescribed service.
- This warranty does not apply to units subject to misuse, abuse, neglect, modifications or unauthorised service.
- This warranty is limited to repair or replacement only at the discretion of Apeks/Aqualung.

 **WARNING:** It is dangerous for untrained and uncertified persons to use the equipment covered by this warranty. Therefore, use of this equipment by an untrained person renders any and all warranties null and void. Use of open circuit umbilical gas supplied equipment by anyone who is not a trained or certified diver, or receiving training under the supervision of an instructor could lead to serious injury or death.

Whenever your unit requires prescribed service or warranty consideration, Apeks/Aqualung requires that the work is carried out by an authorised technician. For help finding a technician in your area, please contact Apeks/Aqualung.

www.apeks.co.uk

www.aqualung.com

 **NOTE:** This warranty gives you specific legal rights. You may have rights which vary from country to country

APEKS DISCLAIMS AND EXCLUDES ANY LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES IN THE U.S. AND CERTAIN OTHER COUNTRIES DO NOT ALLOW EXCLUSIONS OR LIMITATIONS OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THIS MAY NOT APPLY TO YOU.

Restrictions

The following restrictions apply to this warranty:

- This warranty does not cover normal wear. Factory prescribed service by an authorised dealer is required at least once annually.
- This warranty does not extend to damages caused by improper use, improper maintenance, neglect, unauthorised repairs, modifications, accidents, fire or casualty.
- Cosmetic damage, such as scratches, dents and nicks are not covered by this warranty.

MAINTENANCE SECTION

Disassembly Procedures for the Switch Block

1. Unscrew all UNF blanking plugs (12) using 5mm allen key.



2. Remove O ring's (13) from blanking plug's using O ring removal tool.



3. Unscrew adapter (8) using 5mm allen key.



4. Remove O ring (13) using O ring removal tool.



5. Unscrew adapter (11) using 3/4" spanner.



NOTE: AP3051, 1/2" NPT adapter is being used for illustration purposes.



6. Remove P.T.F.E. seal tape.



Caution: Remove all traces of P.T.F.E. tape from threads prior to cleaning. Any traces left on threads can prevent the new application of tape adhering correctly in assembly.

7. Holding cylinder valve hand wheel (3) and using 8mm allen key remove retaining nut (1) and spring (2). Slide cylinder valve hand wheel away from shaft (7).



8. Unscrew gland nut (5) using 7/8" spanner



9. Unscrew shaft (7) from gland nut (5) counter clockwise by hand. Holding shaft, turn gland nut counterclockwise. Keep safe for re assembly.



Caution: Take care when handling the shaft (6), not to cause damage to the face side.

10. Remove O rings (4) and (6) from gland nut (5) using O ring removal tool.



Caution: When removing O ring (4) be careful not to damage internal bore of gland nut.

Disassembly for the Switch Block is Now Complete

Assembly Procedures for the Switch Block

1. Insert the lightly greased O ring (4) into the internal O ring groove inside the gland nut (5).



Caution: Ensure O ring is fully captured in groove and sat flat.



2. Fit O ring (6) over the external thread of the gland nut (5) down to the external O ring groove.



3. Lightly grease the shaft (7) and insert into the gland nut (5) rotating slightly to prevent damage to the internal O ring (4).



4. Engage thread and turn until the shaft shoulder is touching the gland nut.



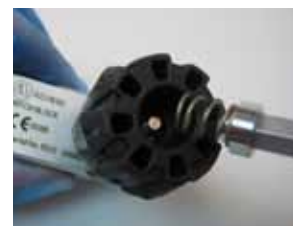
5. Screw the shaft/gland nut sub assembly all the way into the top turret of the main body (8) using a 7/8" spanner to 12Nm (106in.lb) of torque.



6. Place handwheel (3) over shaft ensuring the square shoulder is fully inserted into the square hole of the handwheel.



7. Press the spring (2) onto the retaining nut (1). Secure the handwheel (3) with the retaining nut (1) using an 8mm allen key to 5Nm (44in.lbs) of torque.



8. Put the O ring (13) over the 3/8" thread on the 3/8" hose adapter (9).



9. Screw the hose adapter (9) into the 3/8" port labelled 'BAILOUT INLET' and tighten using a 5mm allen key to 5Nm (44in.lbs) of torque.



10. Wind PTFE sealing tape a minimum of 2-3 times around the 1/2" NPT male thread of either the 1/2" NPT adapter AP3051(11) or the check valve AP3057 (11) depending on which configuration is being assembled.



 **NOTE:** Start winding the PTFE tape 1 thread back from the end and wind counter-clockwise, under slight tension, regardless of which system you are using. Image 10 is the AP0282/G valve using the AP3051 1/2" NPT adapter for illustration purposes. See page 18 for AP0282 version.

11. Hand tighten the adaptor (11) using a 3/4" spanner. Moderate resistance is required.



12. Fit O ring (13) over the thread on blanking plug (12).



13. Screw blanking plug (12) into hose adapter (11) and hand tighten using a 5mm allen key to 5Nm (44in.lbs) of torque.



14. Repeat operation 12 to remaining blanking plugs if in use then fit to empty ports tighten using 5mm allen key to 5Nm (44in.lbs).



Assembly Procedure for the Switch Block is Now Complete

A Leak Test is Now Required See Page 19

Check Valve Disassembly for AP0282 Version

1. Unscrew inlet adapter counter clockwise using a 7/8" spanner.



2. Unscrew check valve (11) counter clockwise using 7/8" spanner.



 **NOTE:** Two 7/8" spanners may be needed if inlet adapter and check valve unscrew as one. Use first spanner to hold check valve as inlet adapter is unscrewed by second spanner.

 **NOTE:** Remove all P.T.F.E. seal tape

Check Valve Assembly for AP0282 Version

1. Hand tighten the check valve (11) using a 3/4" spanner. Moderate resistance is required.



2. Hand tighten the inlet adapter using a 3/4" spanner. Moderate resistance is required.



 **NOTE:** Refer to page 17 operation 10 for P.T.F.E. seal tape fitting.

 **NOTE:** Refer to page 6 for inlet adapter types.

Switch Block Test Procedure

 **NOTE:** To perform the test on the switch block an air supply is required. Illustrated is a test bench supply, a cylinder can be used as an alternative. Supply pressure needs to be between 9.0 and 10.0 Bar (130-145 psi).



1. Remove one of the 3/8" blanking plugs.



2. Attach a 9/16" medium pressure regulator hose to the bailout inlet fitting. Hand tighten with 11/16" spanner.



3. Ensure handwheel is in the closed position on the Switch Block. Slowly turn on air supply then slowly open Switch Block valve, an audible gas flow should be present. Close Switch block handwheel.



 **NOTE:** If there's no gas flow, check gas supply. If supply has no faults check Switch Block for blockages/debris.

3. Submerge Switch Block and allow trapped air to escape. Check for leaks via the open port. This test is to determine whether the shaft seat (7) is sealed correctly. Remove from the water and allow the valve to drain, disperse any remaining water by opening valve.



4. Attach 3/8" medium pressure hose to open port hand tighten with 9/16" spanner. Use either a regulator hose connected to a second stage or an inflation hose connected to an inflation valve.



 **NOTE:** Which ever hose type used, it is only required for pressure relief.

5. Open switch block valve. Immerse switch block into water and check for leaks on all fittings. Pay close attention to 1/2" NPT adapter with PTFE tape.



6. Turn off air supply.



7. Vent air from unit by purging valve or regulator attached.



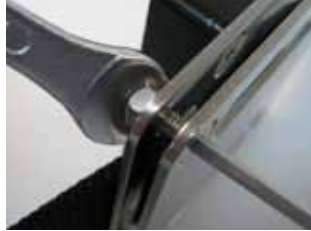
 **NOTE:** If testing AP0282 R.O.W. version a manual blow test is required. Remove a 3/8" blanking plug and blow through the inlet adapter and listen for air passing through empty port. Then suck on the inlet adapter and no air should be drawn.



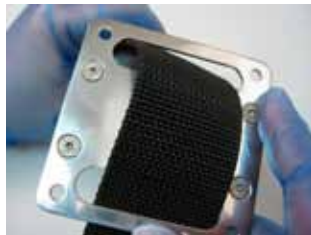
If Any Leaks Are Found Refer to Trouble Shooting Guide

Disassembly Procedures for the Switch Block Mount

1. Holding the nyloc nuts (4) with 7mm spanner remove the four screws (6) using 2.5mm allen key. Remove back plate (7).



2. Unthread webbing through slots in plate mount (5).



3. Unscrew the 6 remaining screws (6) from the plate mount (5) using a 2.5mm allen key.



4. The base (1) will now be free from the plate mount (5)



5. Remove the button (2) and spring (3) from the base (1) carefully to ensure the spring (3) is not lost.



Disassembly for the Switch Block Mount is Now Complete

Assembly Procedures for the Switch Block Mount

6. Carefully place the spring (3) into the recess in the button (2) and fit both into base (1). Push the button (2) to ensure correct fit and ease of movement.



7. Place the base assembly face down and lay the plate (5) on top lining up the screw holes. Ensure slot in back reveals the spring and counter sunk holes are facing upwards.



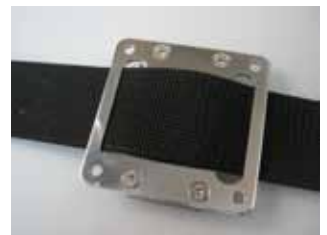
8. Fit the 6 screws (6) using a 2.5mm allen key to a torque value of 1Nm (0.74lb.ft).



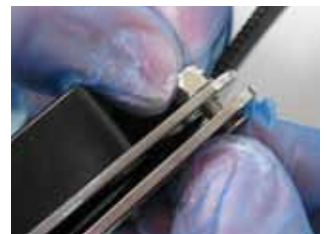
9. Thread the webbing from the intended harness through the 2 slots in the plate (5).



NOTE: Refer to page 9 for full fitting instructions.



10. Place the back plate (7) on the rear side of the plate assembly, lining up the screw holes. Fit one of the screws (6) through the countersunk side of the back plate (7) and hold in place. Fit a nut (4) to the extruding thread of the screw and finger tighten. Perform this operation for the remaining 3 screws.



11. Fully hand tighten the four screws and nuts using a 2.5mm allen key and 7mm spanner using moderate force.



**Assembly for the Switch Block
Mount is Now Complete**

Table 1 - Trouble Shooting Guide

SYMPTOM	POSSIBLE CAUSE	TREATMENT
Air leakage from open outlet port (Valve closed)	1. Valve hand wheel not tight enough	Hand tighten the hand wheel
	2. Shaft seat sealing surface damaged.	Disassemble the shaft sub-assembly and replace shaft
	3. Valve body seat sealing surface damaged.	Replace switch block valve
	4. Debris trapped under valve seat seal surface.	Blow air through the switch block to dislodge debris or disassemble shaft sub-assembly to remove debris
	5. Excessively high bailout supply pressure.	Inspect 1 st stage on bailout cylinder, set pressure to 130.5-137.7 psi (9-9.5 bar) Remove 1 st stage and have serviced by a qualified technician
	6. Valve seat loosened off shaft.	Disassemble the shaft sub-assembly and replace shaft
Air leakage from closed outlet port/s (Valve open)	1. PTFE tape not sealing 3/8" NPT port and adaptor	Remove NPT adaptor and reapply tape as per service manual instructions
	2. Bailout inlet leaking	Remove adaptor, inspect O-ring and replace if damaged.
	3. Leaking out of hand wheel.	Disassemble the shaft sub-assembly, inspect O-rings and shaft for damage or wear and replace where necessary.
	4. All other 3/8 UNF outlet ports leaking	Remove blanking plugs, inspect O-ring and replace if damaged.
	5. Excessively high bailout supply pressure	Inspect 1 st stage on bailout cylinder, set pressure to 130.5-137.7 psi (9-9.5 bar) Remove 1 st stage and have serviced by a qualified technician
Hand wheel jammed	1. Excess dirt and debris	Disassemble the shaft sub-assembly and clean & service switch block
	2. Shaft / Gland nut thread failure	Replace shaft, gland nut and O-rings
Check Valve not opening fully (AP0281 configuration)	1. Excess PTFE sealing tape interfering with check valve poppet	Remove check valve and reapply tape as per service manual instructions.
	2. Salt or debris build up	Remove adaptor and clean inside check valve with fresh water.
	3. Inner Corrosion	Remove check valve, inspect inside and replace.
Check Valve not closing (AP0281 configuration)	1. Excess PTFE sealing tape interfering with check valve poppet	Remove check valve and reapply tape as per service manual instructions.
	2. Salt or debris build up	Remove check valve and clean with fresh water.
	3. Inner Corrosion	Replace check valve
	4. O-ring failure	Replace check valve
Shaft unable to be removed from gland nut	1. Over tightening hand wheel nut	Remove shaft assembly and replace shaft, gland nut and O-rings
Button jammed	1. Excess dirt and debris or salt	Remove from harness. Wash with high pressure fresh water
		Unscrew base from front plate, remove button and spring then clean with fresh water
Button free	1. Button spring broken or corroded	Replace spring
	2. Button spring gone	Replace spring
Hand Wheel meets resistance when turning or turns unevenly (i.e. cork- screws)	1. Shaft dry	Disassemble the shaft sub-assembly and lubricate shaft
	2. Shaft bent	Disassemble the shaft sub-assembly and replace shaft

Table 2 - Recommended Tool List

PART NO.	DESCRIPTION	APPLICATION
AP1493	Christo-Lube / PerFluoroLube	O Ring Lubrication
N/A	7/8" Spanner	Gland Nut
AT33	3/4" Spanner	1/2" Adaptor and Check Valve
N/A	7mm Nut Driver/Spanner	Switch Block Mounting Nuts
N/A	2.5mm Allen Key	Switch Block Mounting Bolts
AT37	5mm Allen Key	3/8" Hose Adaptor and Blanking Plugs
AT35	8mm Allen Key	Retaining Nut
AT79	O Ring Pick Moulded	O Rings
N/A	P.T.F.E. Sealing Tape (Teflon)	Sealing 1/2" Adaptor and Check Valve



Cleaning and Lubrication Procedure

Cleaning Brass and Stainless Steel Parts

1. If required, pre-clean in warm, soapy water* using a nylon bristle tooth brush.
2. Thoroughly clean parts in an ultrasonic cleaner filled with a solution of household white distilled vinegar (Acetic Acid) mixed with fresh water (max 50% vinegar). Clean ultrasonically for 5 minutes (max 10 minutes). DO NOT place plastic, rubber, silicone or anodized aluminium parts in vinegar.
3. Remove parts from the ultrasonic cleaner and rinse with fresh water. If tap water is extremely “hard,” place the parts in a bath of distilled water to prevent any mineral residue. Agitate lightly, and allow to soak for 5-10 minutes. Remove and blow dry with low pressure (25 PSI/1.7Bar) filtered air. Inspect closely to ensure proper cleaning and like-new condition.

Cleaning Plastic & Rubber Parts

Parts made of plastic or rubber may be soaked and cleaned in a solution of warm water mixed with mild dish soap. Use only a soft nylon toothbrush to scrub away any deposits. Rinse in fresh water and thoroughly blow dry, using low pressure filtered air.



Caution: Do not place plastic and rubber parts in acid solutions. Doing so may alter the physical properties of the component, causing it to prematurely degrade and/or break.

Lubrication and Dressing

All O rings should be lubricated with Christo-Lube MCG-111 or PerFluoroLube 20/1. Dress the O rings with a very light film of grease, and remove any visible excess by running the O ring between thumb and forefinger. Avoid applying excessive amounts of lubricant as this will attract particulate matter that may cause damage to the O ring.

*Soapy water is defined as “household” grade liquid dishwashing detergent diluted in warm water.

Table 3 - Recommended Lubricants & Cleaners

LUBRICANT / CLEANER	APPLICATION	SOURCE
Christo-Lube® MCG-111 (Lubricant).	All O ring seals	Lubrication Technologies 310 Morton Street Jackson, OH 45640, USA (800) 477-8704, or Apeks Marine Equipment Ltd PN AP1495
PerFluoroLube® 20/1 (Lubricant).	All O ring seals	Performance Fluids Suite 101 Lomeshaye Buisness Park Turner Road Nelson Lancashire BB9 7DR
 CAUTION: Silicone rubber requires no lubrication or preservative treatment. DO NOT apply grease or spray to silicone rubber parts (eg. Diaphragm, Exhaust Valves.) Doing so may cause a chemical breakdown and premature deterioration of the material.		
Biox (Cleaning agent)	Biological immersion fluid for reusable stainless steel and brass parts	Biox LTD 52 Hughenden Avenue High Wycombe Bucks HP13 5SJ
White distilled vinegar (100gr.) (Cleaning agent)	Acid bath / ultrasonic cleaner for reusable stainless steel and brass parts	"Household" grade
 CAUTION: Do not use muriatic acid for the cleaning of any parts. Even if strongly diluted, muriatic acid can harm chrome plating and may leave a residue that is harmful to o-ring seals and other parts.		
Liquid dish washing detergent diluted with warm water (Cleaning agent)	Degreaser for stainless steel and brass parts, general cleaning solution for plastic and rubber	"Household" grade

Table 4 - Torque Specifications

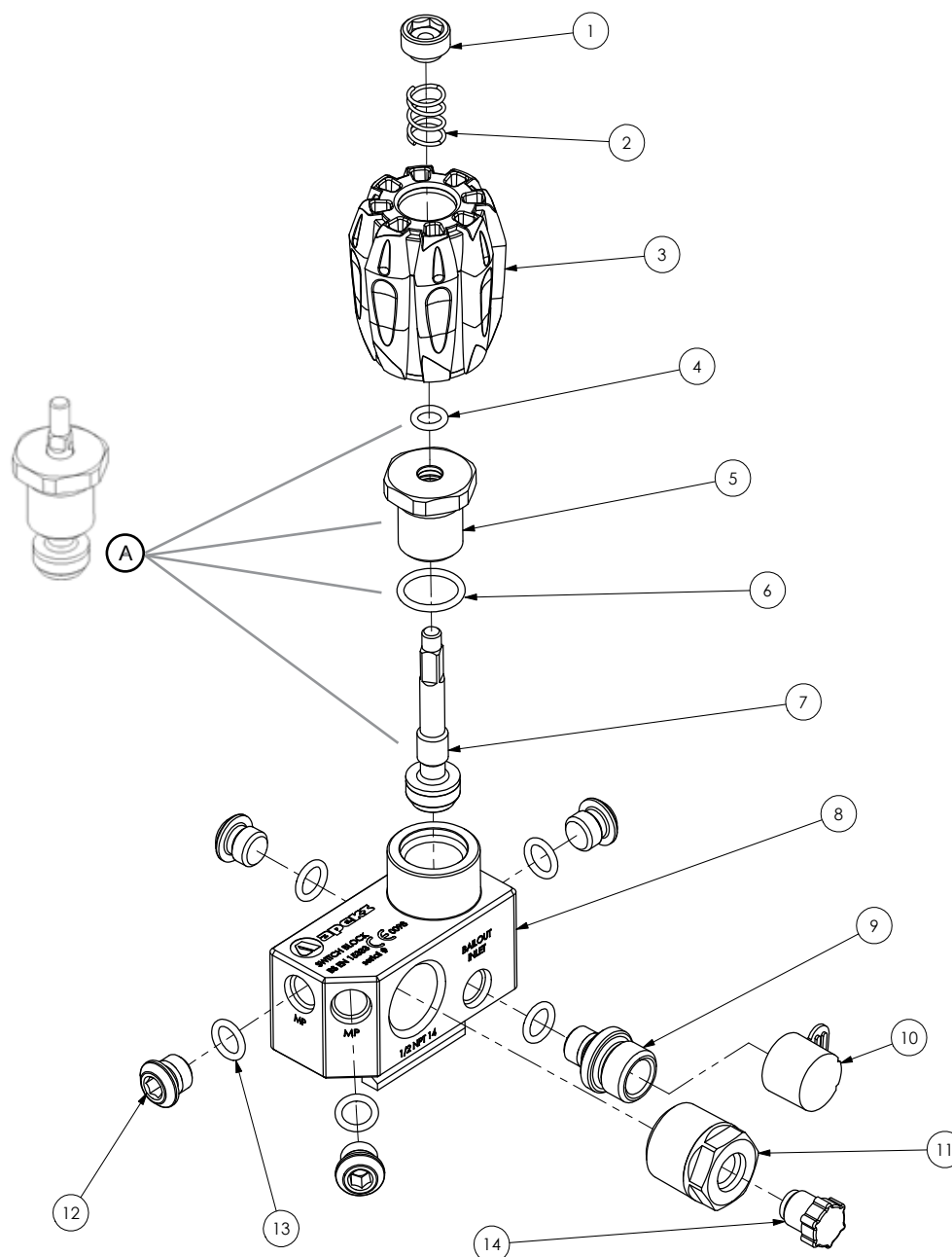
PART NUMBER	DESCRIPTION / KEY NUMBER	TORQUE
AP8021	Retaining Nut M5 Switch Block	5Nm (44in.lbs)
AP3048	Gland Nut Switch Block	12Nm (106in.lbs)
AP1408	3/8" UNF Blanking Plug	5Nm (44in.lbs)
AP3050	Adapter 3/8" UNF Hose	5Nm (44in.lbs)
AP3056	Screw M4 x 10 CSK A2	1Nm (8.85in.lbs)

Table 5 - Test Bench Specifications

TEST	CONDITION	ACCEPTABLE RANGE
Internal/External Leak	High Pressure >200 Bar Gauge (2900 psi) Med Pressure 9.5 ± 0.5 Bar (137 $\pm$ 7 psi)	No Visual Leaks Allowed

AP0282/G Switch Block Valve G3000SS

Exploded Parts Diagram

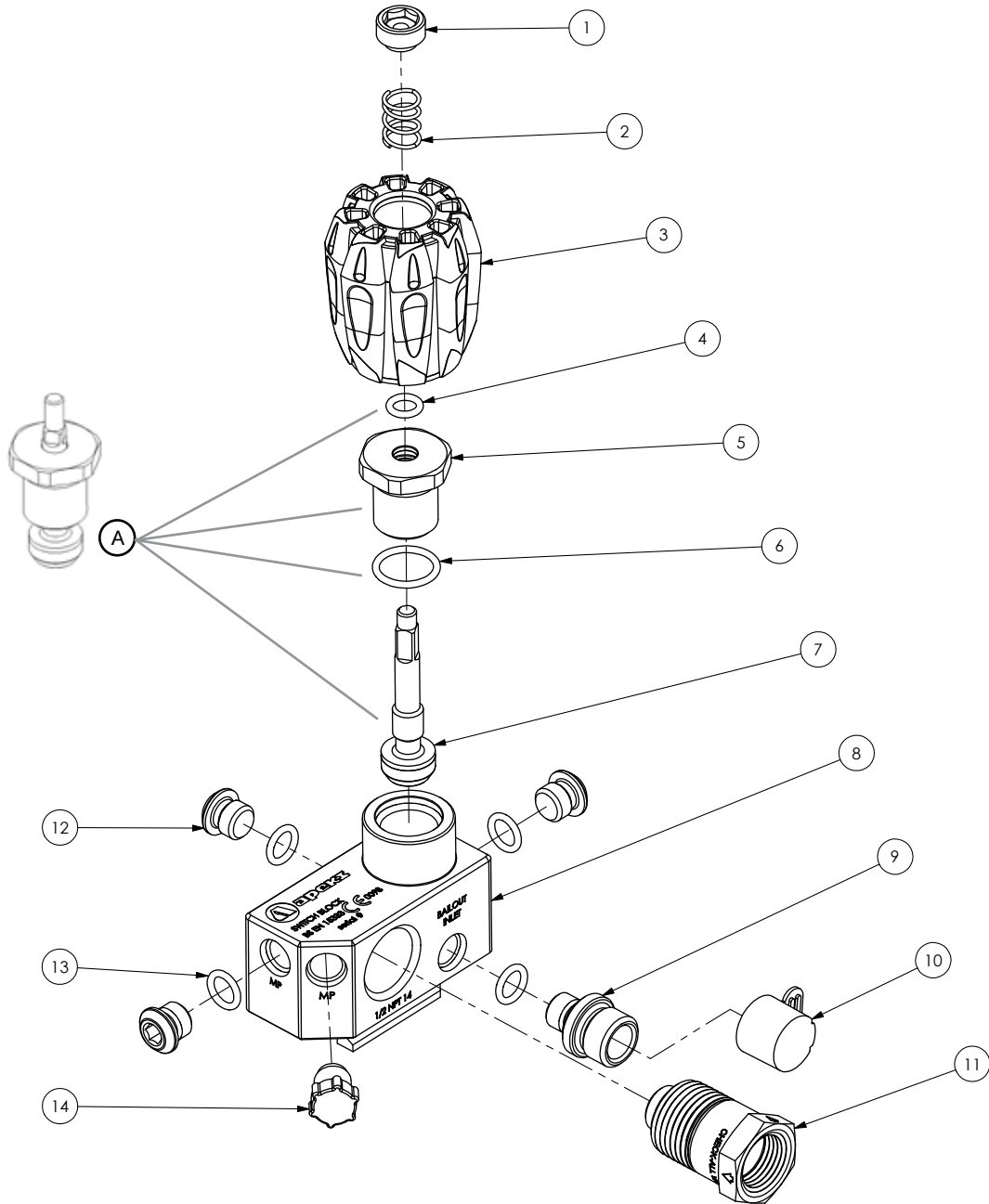


1	AP8021	Retaining Nut M5 Switch Block	8	AP3046	Body Switch Block
2	AP4012	Spring	9	AP3050	Adapter 3/8" UNF Hose
3	AP8014	Cylinder Valve Hand Wheel	10	AP1265	9/16" UNF Moss Cap
4	AP1154	BS010 O Ring	11	AP3051	Adapter 1/2" NPT 3/8" Hose
5	AP3048	Gland Nut Switch Block	12	AP1408	3/8" UNF Blanking Plug
6	AP1267	BS015 O Ring	13	AP1409	BS011 O Ring
7	AP3047	Shaft Switch Block	14	AP1259-38	3/8" UNF Red Moss Cap

 **NOTE:** Part (A) AP0347/K Shaft Assembly Kit contains parts 4,5,6+7 ready assembled

All items in bold italics to be replaced when servicing. Service kit ref; AP0281/K

AP0282 Switch Block Valve Exploded Parts Diagram



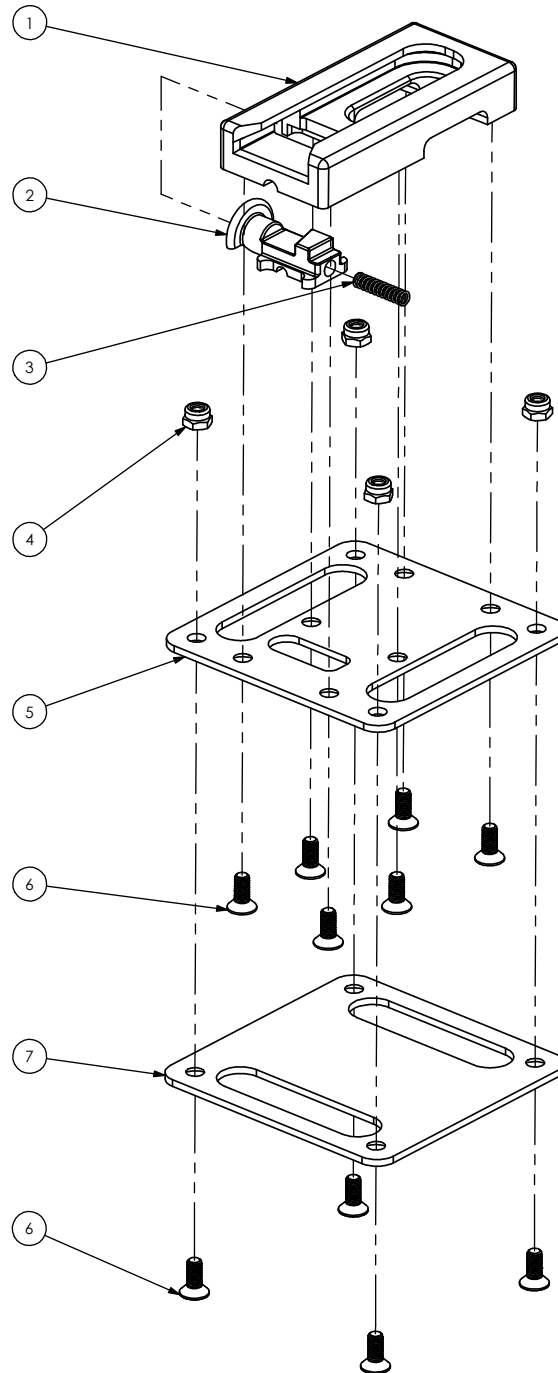
 NOTE: For inlet adapter details refer to page 5

1	AP8021	Retaining Nut M5 Switch Block	8	AP3046	Body Switch Block
2	AP4012	Spring	9	AP3050	Adapter 3/8" UNF Hose
3	AP8014	Cylinder Valve Hand Wheel	10	AP1265	9/16" UNF Moss Cap
4	AP1154	BS010 O Ring	11	AP3057	Check Valve BUDBR 1/2" NPT
5	AP3048	Gland Nut Switch Block	12	AP1408	3/8" UNF Blanking Plug
6	AP1267	BS015 O ring	13	AP1409	BS011 O Ring
7	AP3047	Shaft Switch Block	14	AP1259-38	3/8" UNF Red Moss Cap

 NOTE: Part (A) AP0347/K shaft Assembly Kit contains parts 4,5,6+7 ready assembled

All items in bold italics to be replaced when servicing. Service kit ref; AP0281/K

AP0283 Switch Block Mount Exploded Parts Diagram



1	AP3053	Base Switch Block Mount	5	AP3052	Plate Mount Switch Block
2	AP3054	Button Mount Switch Block	6	AP3056	Screw M4 x 10 CSK A2
3	AP3055	Spring Mount Switch Block	7	AP3060	Back Plate Switch Block Mount
4	AP2520	A 4 Stainless Steel M4 Nyloc Nut			



SWITCH BLOCK VALVE

OWNER and MAINTENANCE MANUAL

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