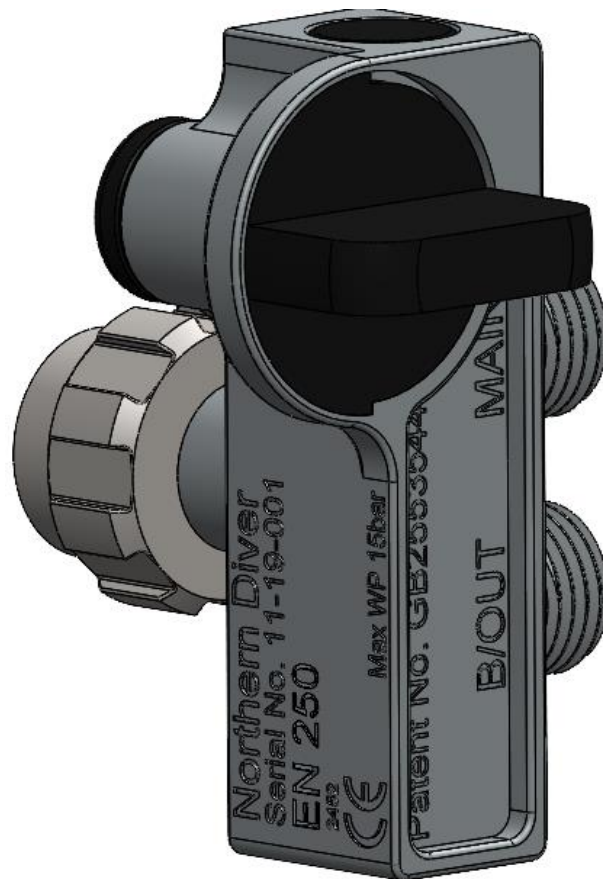


USER INSTRUCTIONS

Switch Block – Interspiro (AGA) Part No ND0000772

Switch Block – OTS Part No ND0001413



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User Instructions – Switch Block



IMPORTANT

Please read this user instruction carefully before attempting to use the Switch Block as it contains important information on the proper care, handling and use of the equipment. Keep this manual with the equipment.

The safety and performance of the unit depends not only on the Switch Block but also on the ancillary equipment used with it. Ensure any ancillary equipment is compatible with the Switch Block and other equipment used. These instructions should be retained for reference during the life of the product. If you have any questions concerning the material contained in this manual, please contact the supplier of the equipment.

INTENDED USE

The Northern Diver Switch Block has been designed to be used with the Interspiro Divator AGA and OTS full face mask 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 in case of low or failure of the primary supply.

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

READ BEFORE USE – HEALTH & SAFETY INFORMATION

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

ATTENTION SYMBOLS



This symbol is used to refer to instructions.



This symbol is used to indicate information which is crucial to the operation of the device.

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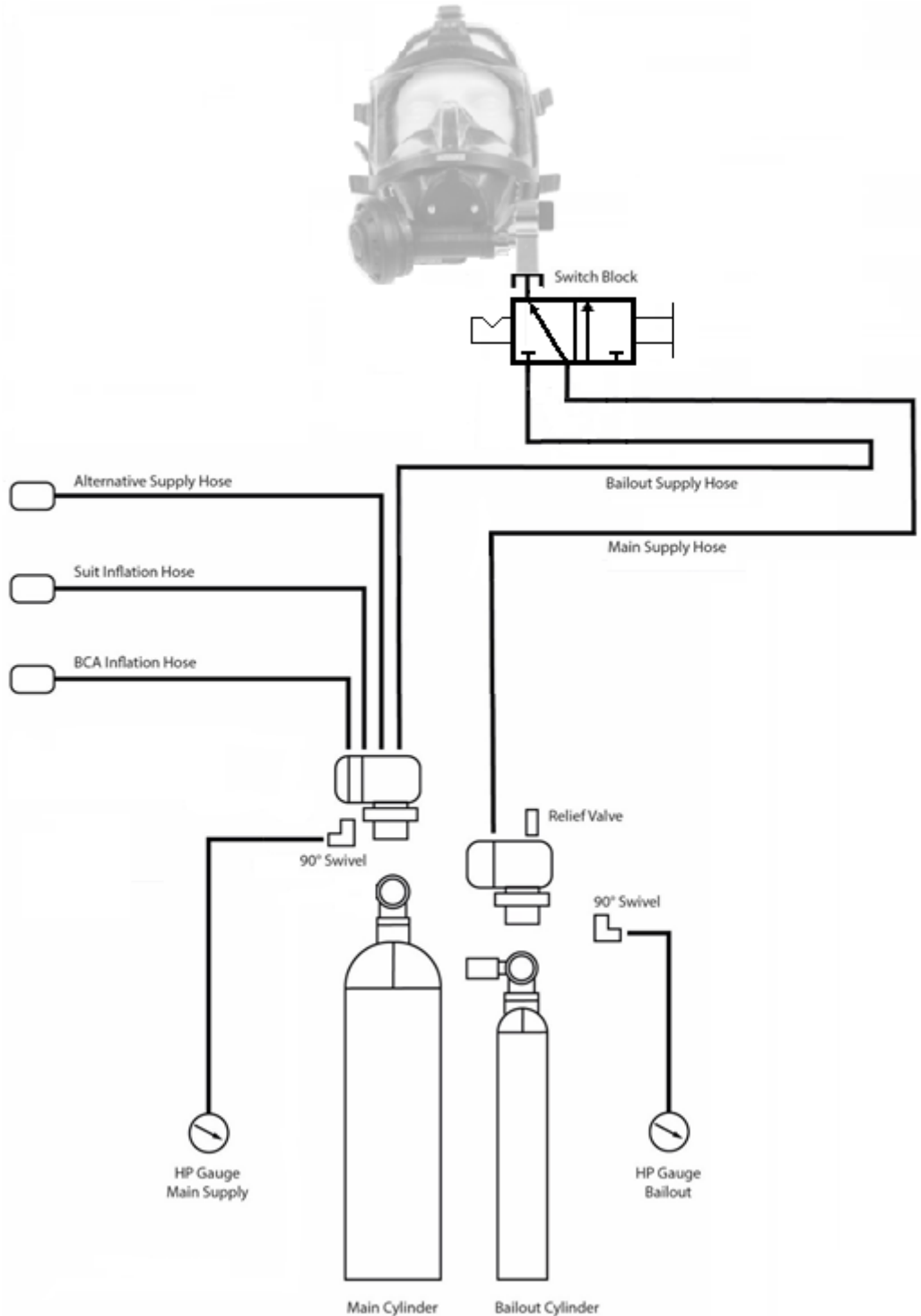
TOPICS	
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User Instructions – Switch Block

1. Outline Description.

- Below shows a typical P&ID (piping and instrumentation diagram) of the switch block in use within an open-circuit diving set consisting of a main cylinder and a smaller bailout cylinder. Both cylinders are fitted with pressure regulators and supply air to a full facemask.

System Schematic



2. Compatibility Components & Sub-assemblies

	Components	Manufacture	Regulatory status
1	Cylinder Valves	Any Compatible	EN250:2014
2	1 st Stage Regulators	Any Compatible	EN250:2014
3	Medium Pressure Hoses	Any Compatible	EN250:2014
4	Switch Block ND0000772	Northern Diver	EN250:2014
5	Switch Block ND0001413	Northern Diver	EN250:2014
6	Full Face Mask & 2 nd Stage Regulator	Interspiro AGA	EN250:2014
7	Full Face Mask & 2 nd Stage Regulator	OTS	EN250:2014

- All the above components & sub-assemblies are to be manufactured and tested in accordance with EN250:2014.
- Any connections and safety devices should also be covered by EN250:2014.
- The Full Face Mask and Switch Block (items 4 & 5) have been tested by a notified body to EN250:2014

3. Description

SWITCH BLOCK ASSEMBLY

The Switch Block (below) has been designed to be used with the Interspiro Divator AGA and OTS full face mask with a Medium Pressure (i.e. less than 16 bar / 232 psi) air supply. The switch block receives air hoses from the main and bailout cylinders and allows the diver to switch from the primary air supply to an alternate bailout air supply in case of low or failure of the primary supply. The switch block is attached to the diver's mask, which is in an easily accessible location so the diver can open the Switch Block valve unaided and in nil visibility conditions. It is a diver activated switched valve to change the air supply from the main cylinder (switch in horizontal position) to the bailout (turn switch 90 deg, clockwise to the vertical position).

User Instructions – Switch Block

ATTACHING HOSES TO THE SWITCH BLOCK

Attach main hose to onto main inlet connection on Switch block as shown in Fig. 1 Screw hose nut fully up against the shoulder as shown in fig.2 (nip tight with spanner to prevent hose working loose while in operation). Repeat assembly for bail hose as shown in Fig. 3.



Fig 1



Fig 2

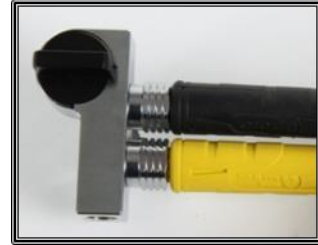


Fig 3



AGA full face mask and switch block set up



OTS full face mask and switch block set up

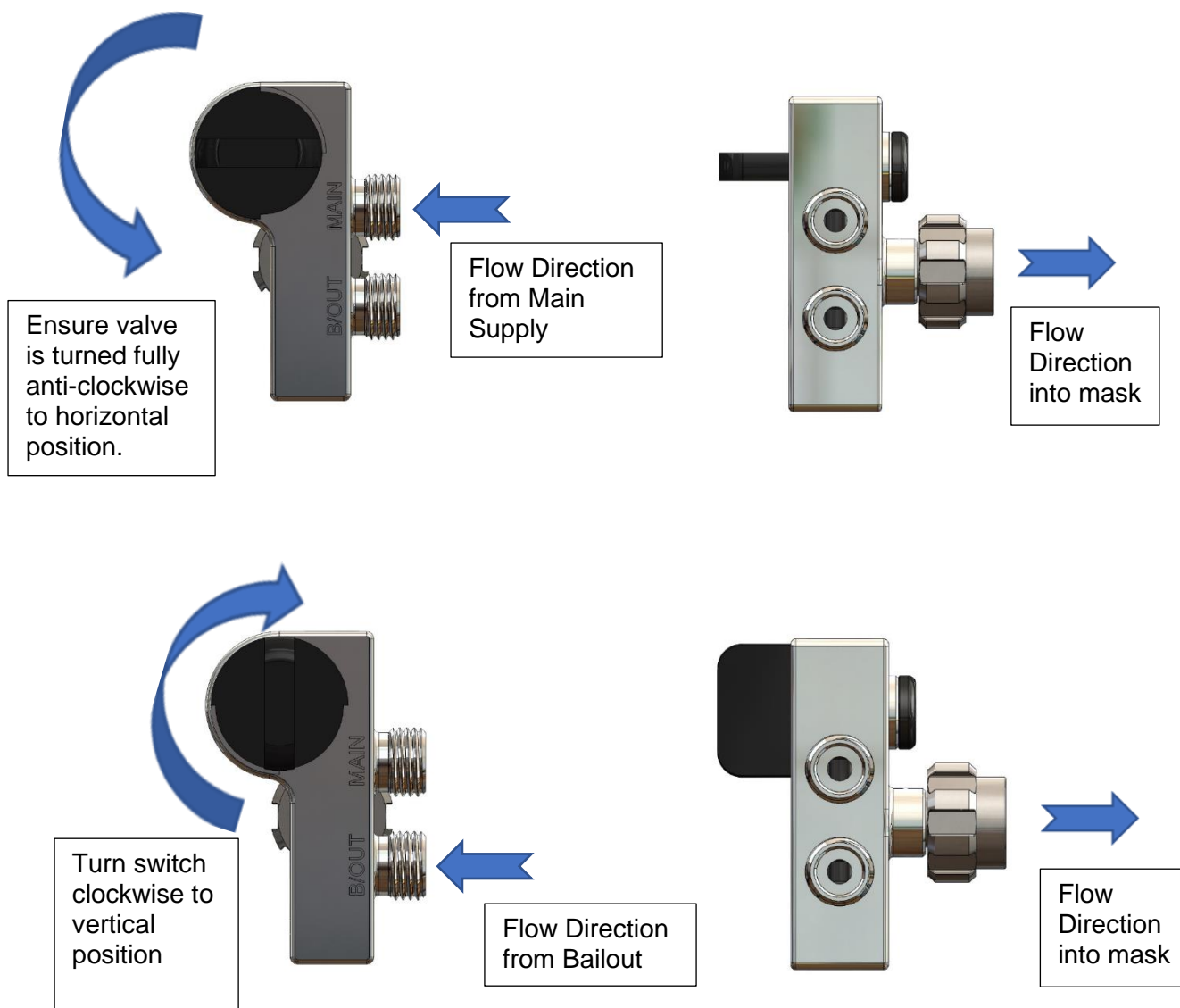
User Instructions – Switch Block

4. Instructions for Use




Pre-Dive Check - Ensure the appropriate hoses are attached (torque 5Nm) as shown (page 5), Main hose (black) to main supply and bailout (yellow) to bailout supply.

- Starting position is when the valve is horizontal (flow direction from main supply).
- Switch to bailout by turning the valve vertical 90 Deg. (Clockwise direction).
- Gas flow from Main hose supply is now closed.





- Gas flow is from Bailout supply, Bailout hose supply is open.

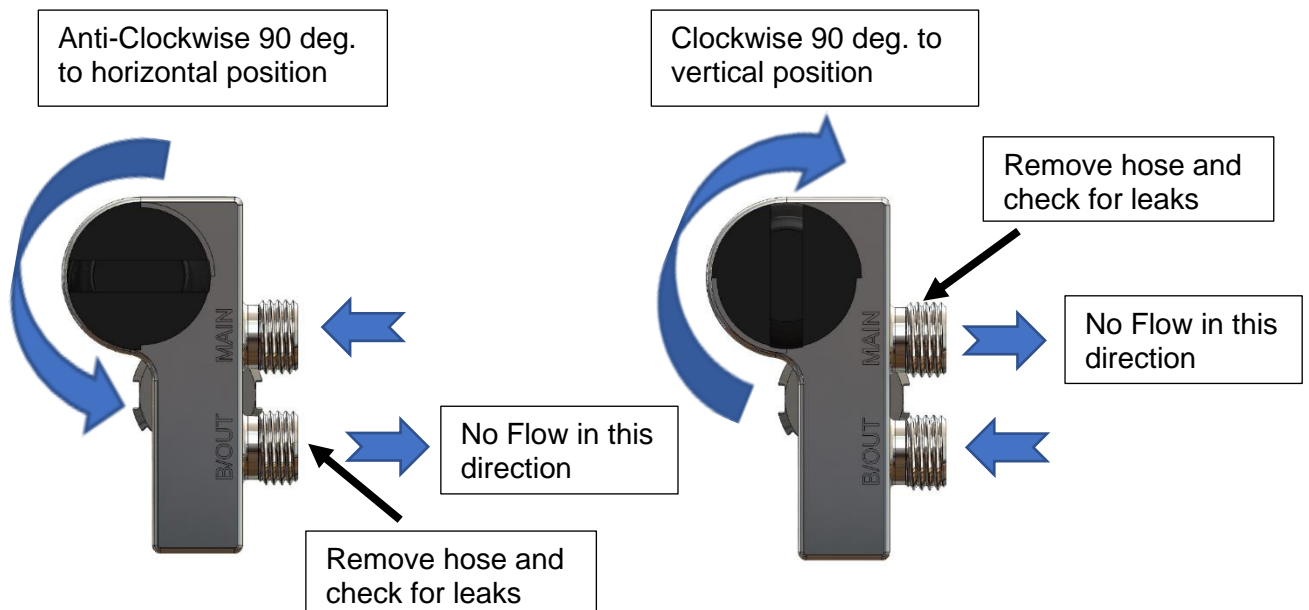
User Instructions – Switch Block

 Note:- When operating the Switch Block 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 system and have it serviced or replaced.
WARNING: If the bailout valve leaks, gas will empty from the bailout cylinder leaving no air for the diver in an emergency situation.

4. Instructions for Use

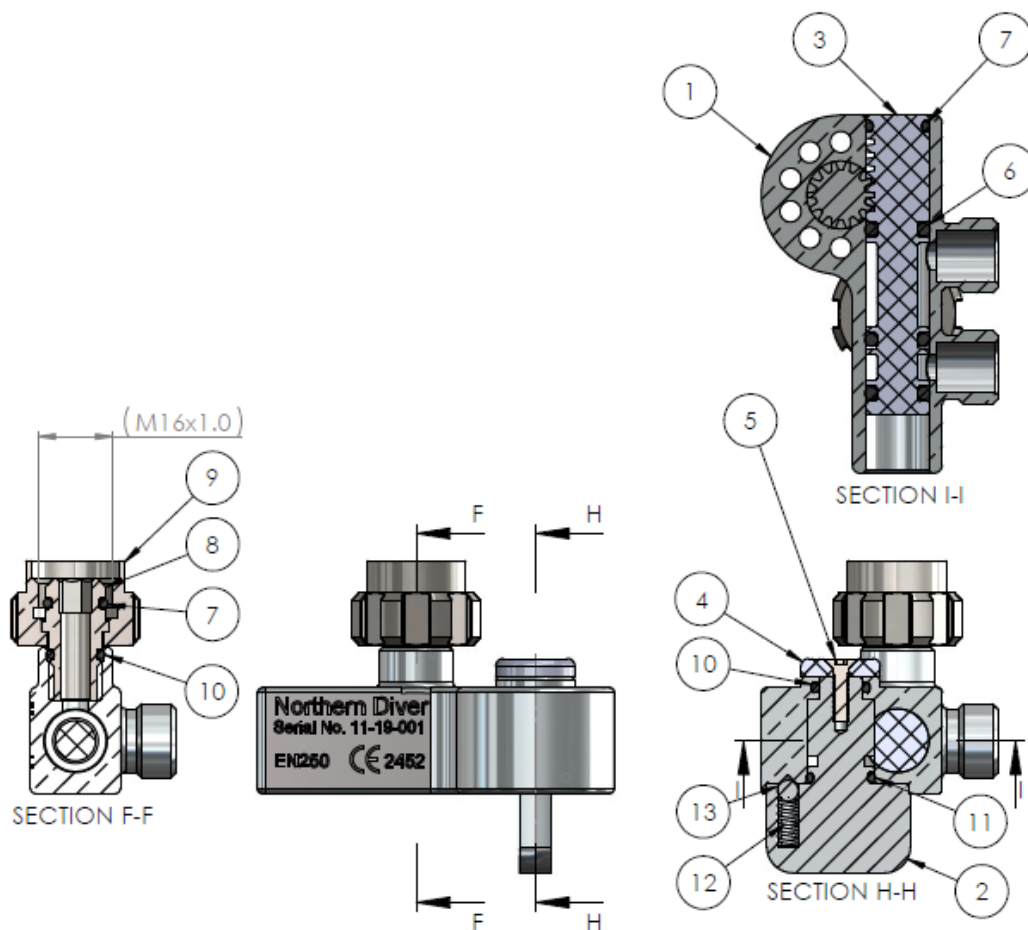
 **WARNING: The bailout cylinder only allows the diver a limited air supply and he must immediately return to the surface or to a place of safety.**
Always keep the bailout hose pressurised after test and make sure the bailout switch is closed.

 Pre-Dive Check – With the switch block valve horizontal (feeding from the main side) there should be no back flow coming out of the bailout connection. This can be checked by removing bailout hose from the Switch Block and checking for leaks. Do the same test to check leaks back flowing from the bailout into the main, turn the valve vertical and repeat test.



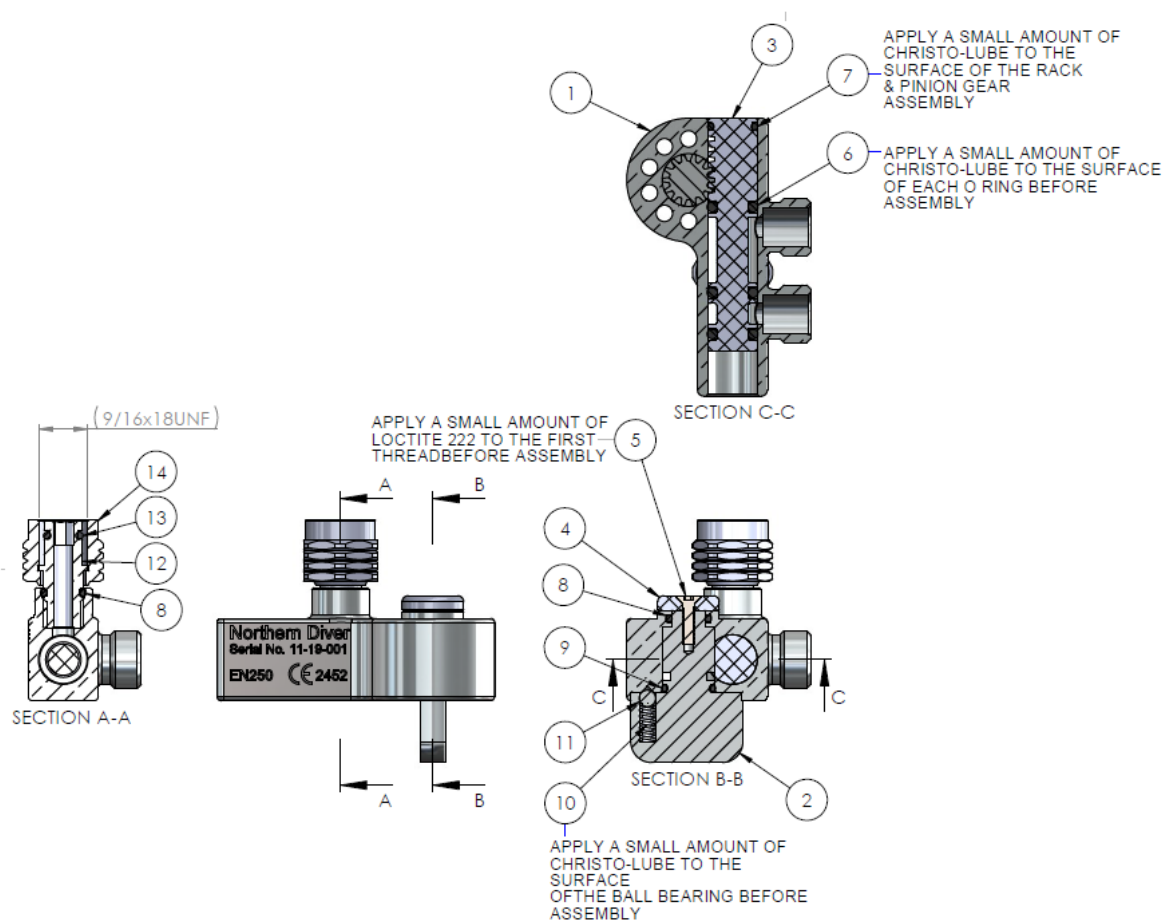
5. Switch Block Assembly ND0000772

ITEM No.	PART NO	DESCRIPTION	QTY
1	ND0000770A	Switch Block Body Machining	1
2	ND0000771D	Pinion Wheel Machining	1
3	ND0000774	Rack Machining	1
4	ND0001055	Thrust Washer	1
5	ND0001056	M3 C/Sink Screw	1
6	ND0000777	O-Ring	3
7	ND0000768	O-Ring	2
8	ND0000778	Switch Block Outlet Adaptor	1
9	ND0000779	Switch Block Outlet Connector	1
10	ND0000769	O-Ring	2
11	ND0000773	O-Ring	1
12	ND0000766	Spring	1
13	ND0000767	Ball Bearing	1



6. Switch Block Assembly ND0001413

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	ND0000770A	SWITCH BLOCK MACHINED BODY	1
2	ND0000771D	PINION WHEEL MACHINING	1
3	ND0000774	RACK MACHINING	1
4	ND0001055	THRUST WASHER	1
5	ND0001056	M3 COUNTERSINK SCREW	1
6	ND0000777	O RING	3
7	ND0000768	O RING	1
8	ND0000769	O RING	2
9	ND0000773	O RING	1
10	ND0000766	SPRING	1
11	ND0000767	BALL BEARING	1
12	ND0000778	SWITCH BLOCK OUTLET ADAPTOR	1
13	bs010	O RING	1
14	MOD006A	NUT CONNECTOR	1




User Instructions – Switch Block

Lubrication and Dressing

All O rings should be lubricated with Christo-Lube MCG-111 where indicated above. 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.

7. Specifications

Items	Specifications		
Product name	Switch Block		
Part number	ND0000772 & ND0001413		
Manufacturers information:	Switch Block is manufactured in the UK by Northern Diver Int Ltd		
Patent No.	GB2553544	Switch Block (UK Patent)	
Year of Manufacture	2019	The year of manufacture is given on the serial number label	
Regulatory status	EN 250:2014		Conforms to the requirements of EN 250:2014 Respiratory equipment – open circuit self-contained compressed air diving apparatus
Regulation	(EU) 2016/425		Personal Protective Equipment
Notified Body	No. 2425	Name Vojensky technicky ustav, s.p	Address odstepny zavod VTUPV Vita Nejedleho 691 682 01 Vysko Czech Republic
Depth Rating		0-50 Metres	
Dimensions and weight	Dimensions	Length 68.5mm Width 60mm Depth 44.5mm	
	Weight	230g	
Materials	Housing: Brass CZ121, Finish: Chrome Plated, Spring 316 S/S, O-Rings NBR, Acetal		
Temperature condition	Performance: <10°C Storage: -30°C to +70°C Testing: -20°C to +55°C		
Breathable Air	EN 12021	Use with compressed air only which complies with EN 12021	

The EU Declaration of Conformity can be found on the Northern Diver Int Ltd product pages in the download section, please visit our website:

www.ndiver-military.com/switchblock

8. Care, Storage & Maintenance

The testing and functionality checks shown above should be carried out every time the unit is used and at service intervals determined by the service provider. It is recommended that the Switch Block should be examined annually regardless of usage and a full service performed every 2 years.



Clearly with intense use and in different water conditions (contaminated) it is recommended to service the Switch Block more regularly. In some contaminated water it may need replacement of seals after every use and this should be determined via risk assessment.

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.

Maintenance:

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

Warranty:

The supplier shall warrant the product against defects or faults for a maximum period of 12 months from the date of delivery to the end user.

User Instructions – Switch Block

9. Fault Finding

Fault	Cause	Remedy
No Air Supply (Main)	Cylinder content empty	Check cylinder content, refill if required
	Cylinder valve closed	Open cylinder valve
	Hose blockage	Remove hose and check for blockage or damage, replace if necessary.
	Internal valve o ring failure	Check flow direction through valve (as shown on page 8). If not correct, disassemble, replace O-rings with serviceable parts
No Air Supply (Bailout)	Cylinder content empty	Check cylinder content, refill if required
	Cylinder valve closed	Open cylinder valve
	Hose blockage	Remove hose and check for blockage or damage
	Switch Block in wrong position	Open Switch Block valve turn clockwise 90 deg. to horizontal position.
Switch seizing	Excess dirt and debris	Disassemble, clean and service
	Rack/Pinion failure	Disassemble, replace with serviceable parts
Valve not opening fully / closing	O-ring failure	Disassemble, replace with serviceable parts
	Spring failure	Disassemble, replace with serviceable parts
	Internal contamination	Disassemble, clean and service

For technical support contact Northern Diver Customer Service Centre on Tel +44(0)1257 256933

User Instructions – Switch Block

10. Health & Safety Requirements.

- Before using this Switch Block, you must receive instruction and certification in surface supplied full face mask diving from a recognised training agency.
- Only to be used by qualified divers.
- When your Switch Block requires prescribed service or warranty considerations, Northern Diver requires that the work is carried out by an authorised technician.
- Use of this equipment by uncertified or untrained divers is dangerous and can result in injury or death.

11. Shelf Life.

- Shelf life is governed by the O-ring seals and seat materials within the Switch Block, therefore we recommend that if it has been stood on a shelf for more than 2 years from date of manufacture that a full service is performed.

12. Environmental Protection.

There are no known risks associated with disposal of the Switch Block at the end of its working life.

13. Reporting Complaints

When a complaint is discovered, immediately contact your supplier of the equipment and provide the following details:

- Customer name and address.
- Person you wish to receive the investigation report if required.
- Serial number where applicable
- Nature of the complaint and any serious consequences that may have arisen.

Then segregate the equipment and await instructions from the supplier.

Changes :- Northern Diver (International) Ltd is continually developing its product range and reserves the right to alter the above specification without notice.

Liability:- Northern Diver (International) Ltd assumes no liability for damages, losses, or cost incurred consequentially through the operation or malfunction of any Northern Diver (International) Ltd product.

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Supplier information