NORTHERN DIVER

GUARDIAN / FLIGHT / RABA / SABA

BCD MANUAL

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CONTENTS

COMPANY INTRODUCTION

Thank you for your purchase. We're sure you'll love your new Northern Diver BCD.
Please take the time to read this manual, and retain it for future reference.

This manual provides you with easy access to the key features and functions of our BCDS, along with recommendations on how best to service and care for your BCD. Should you wish to know more about Northern Diver diving equipment, please visit our website www.ndiver.com.

DEFINITIONS OF WARNING, CAUTIONS AND NOTES

WARNING

Indicates a situation that, if not avoidable, will result in serious injury or death.

CAUTION

Indicates a situation that, if not avoidable, may result in serious injury or death.

NOTE

Indicates a situation that, if not avoidable, may result in minor or moderate injury or damage to the BCD.

GENERAL WARNING AND CAUTIONS

Read owner's guide and any labels affixed to the BCD thoroughly before using this product. If you do not completely understand these instructions, do not use this BCD.

Do not use this BCD if you have not received proper training and certification in SCUBA diving.

The BCD is intended as a buoyancy compensator only and it could not be consider as a "Life buoys and lift jacket.

This is not a life jacket; it does not guarantee a head up position of the wearer at the surface.

Emergency face up flotation may not be provided for all wearers and in all conditions.

Improper use, or intentional misuse of this product may cause serious injury or death.

Do not inhale gases from within this BCD.

The BCD is designed to provide a certain degree of buoyancy in an underwater environment. Do not over inflate your compensator. The ascent must be controlled. In case of a fast, uncontrolled ascent, begin to immediately release the gas from your compensator to slow the ascent. A rapid, uncontrolled ascent may cause pulmonary embolism or decompression sickness and can result in serious injury or death.

Prior to each dive, full inflate the BCD and inspect for leakage, damage and proper operation.

Before diving this BCD in open water, it is important to familiarize yourself with it first in confined shallow water, do not enter open water until you have weighted yourself properly and become familiar with using all of its features and adjustments.

Before entering water, check to ensure that you can ditch the dumpable weight pouch quickly and easily without any obstruction. You may need to do it when under water in the events of out of air emergency or uncontrolled descent.

Obtain prescribed service for this BCD from an HIL OEM customer at least once a year. The service consists of a complete overhaul of the power inflator and a general air leak inspection of valve connections and bladder.

The user are not allowed to modify or replace parts except for the cap of the overpressure valve. Repair and disassembly must only be performed by HIL OEM customer. Unauthorized service will void the warranty and may cause this product to malfunction.

The BCD can be used with all standard diving equipment.

The Maximum depth covered by certification is 50 meters.

The BCD is not to be used as a breathing device.

Limitation to use of compressed air in compliance with EN12021

Maximum recommended cylinder capacity is 20 liters(See Fig. 1)

Fig. 1

Temperature Range for Use:
Air -20°C to +50 °C
Water -2 °C to +40 °C

A buoyancy compensator is not a breathing system and that gas should not be inhaled from the buoyancy compensator's bladder.

MARKING

When fully inflated in fresh water at sea-level, approximate buoyancy capacity of each size is as follows which is printed on a label sewn on BCD :

S3000 / S5000 / S5010 BC'S LIFT

SIZE	XS	SM	MD	LG	XL
Part No.	90110.51/ 90164.51/ 90353.51	90110.52/ 90164.52/ 90353.52	90110.53/ 90164.53/ 90353.53	90110.55/ 90164.55/ 90353.55	90110.56/ 90164.56/ 90353.56
Buoyancy	120N	140N	170N	190N	230N

S700 BC'S LIFT

SIZE	SM	MD	LG	XL
Part No.	90617.52	90617.53	90617.55	90617.56
Buoyancy	90N	90N	150N	150N

AIRWAY

Power inflator

Inflator's Working Pressures are 110 psi (7.58bars)
Minimum, 160 psi(11.03bars) Maximum, and 140 psi(9.65bars) nominal.

Inflator button, Press it to inflator BCD. **(See Fig. 1)**

Manual button and Mouthpiece, Press it to deflate BC or oral inflate BCD **(See Fig. 2)**

FIG. 1

FIG. 2

NOTE

Oral inflation of your BCD under water is a skill that must be achieved under the supervision of a certified diving instructor.

NOTE

Depressing the oral inflator button while the BCD is empty may allow the water to enter the bladder.

FIG. 3

Rapid Exhaust Valve

It automatically release air when the air pressure inside the bladder is nearly 2.4 pounds per square inch(0.165bar) over ambient.

You can pull to dump air thru REV too.
(see Fig. 3)

ATTACHING LOW PRESSURE INFLATOR HOSE

WARNING

Only attach the LP hose to the lower pressure (LP) port of regulator. Attach to the High Pressure (HP) port may cause the hose to burst and result in serious injury.

Ensure the presence of an o-ring.
(See Fig. 4)

Screw the male end into the LP port of regulator, make sure it's secured.
(See Fig. 5)

Attach female end onto inflator nipple.
(See Fig. 6)

Open the tank valve slowly and press the inflator button to hear the air flowing into BC.
(See Fig. 7)

FIG. 4

FIG. 5

FIG. 6

FIG. 7

THREADING THE TANK BAND AND BUCKLE

NOTE

BCD is shipped with the tank band pre-threaded through the buckle.
(See Fig. 8 Fig. 9 Fig. 10 Fig. 11 Fig. 12 & Fig. 13)

FIG. 8

FIG. 9

FIG. 10

FIG. 11

FIG. 12

FIG. 13

ATTACHING THE BCD TO THE TANK

NOTE

Wet the tank band first, the nylon webbing stretches a little while wet.

NOTE

Make sure the metal loop of the tank band is as close to the rear of BCD as possible, this will provide a great range of adjustment.

Loop the tank locator strap over the tank valve; adjust it to hold the BCD at the desired height position.
(See Fig. 4)

Open the buckle and pull the free end of the tank band until the backpack fit the tank very tight.
(See Fig. 15)

Close the buckle half and thread the free end of the band through the end slot of the buckle.
(See Fig. 16)

Close buckle and secure the Velcro closure of the tank band.
(See Fig. 17)

FIG. 14

FIG. 15

FIG. 16

FIG. 17

DONNING THE BCD

FIG. 18

Loosen each straps to its maximum length by lifting up on the bottom tabs of the buckle.
(See Fig.18)

FIG. 19

Open the sternum strap buckle and waist strap buckle.
(See Fig.19)

FIG. 20

If equipped, and open the waistband.
(See Fig.20)

FIG. 21

Have your dive buddy hold the BCD cylinder assembly behind you while you thread your arms through the shoulder straps.

FIG. 22

Pull the BC onto your back, adjust it comfortably fit your height, fasten close the waist band until it is close fit for your waist. **(See Fig.21 & Fig 22)**

FIG. 23

After your dive buddy released the BC / cylinder assembly, and the weight of the BCD was located on your hips and shoulders, bend forward at the waist and tighten the shoulder straps by pulling down on the D-rings located on the ends of the straps. **(See Fig.23)**

FIG. 24

Close the sternum and waist straps, if equipped, and pull the free ends until they are comfortably snug but not restricting **(See Fig.24)**

FIG. 25

Readjust the waistband, if necessary, so that it is comfortably fit your waist but not restricting, with 4 inches of overlapping closure.
(See Fig.25)

OVER PRESSURE RELIEF VALVES

Some BCD models have this feature.

FIG. 26

FIG. 27

FIG. 28

It automatically releases air when the air pressure inside the bladder is nearly 2.4 psi (0.165bar) over ambient.
(See Fig. 26)

You can pull the ball to rapidly dump the air too.
(See Fig. 27 & Fig. 28)

The maximum outflow relief valve is dump valve which assembly at the bottom or top of BC.

The maximum gas flow rate of the dump valve is 30-35N/s
(See Fig. 26)

NOTE

Whenever you remove and replace the cap of the valve, make sure that the stainless spring is in correct place; pull it to feel the spring function well and inflate the BCD to see if it is secured and no leak.

CUMMERBUND ADJUSTMENT

Some BCD models have this feature.

Adjust the ends and secure the Velcro.
(See Fig. 29 Fig.30 & Fig. 31)

The adjustment should leave an overlap of 4 inches when wearing the BCD.
(See Fig. 32)

FIG. 29

FIG. 30

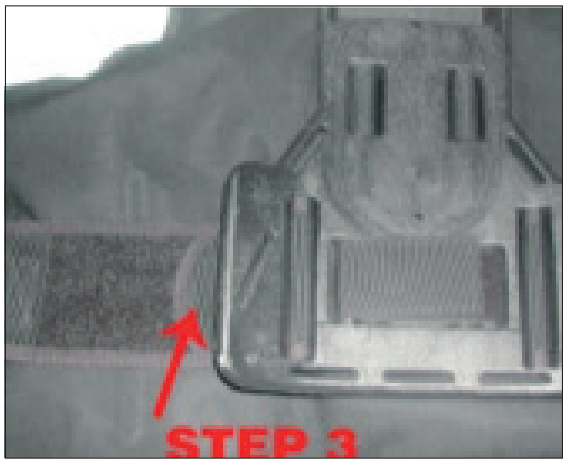

FIG. 31

FIG. 32

DUMPABLE WEIGHT POUCH

WARNING

You must practice the ditching of these Dumpable Weight Pouches prior to each dive.

CAUTION

To avoid injuring other divers, always look below you before dropping weight.

Put weight into pouches
(See Fig. 33 & Fig. 34)

Insert weight pouches into BCD and secure with Velcro and/or buckles.
(See Fig. 35 & Fig. 36)

Grasp the handles and pull them out firmly and completely out of BCD.
(See Fig. 37)

FIG. 33

FIG. 34

FIG. 35

FIG. 36

FIG. 37

Put weight into pouches
(See Fig. 33-1 & Fig. 34-1)

Insert weight pouches into BCD and secure with Velcro and/or buckles.
(Fig. 35-1 & Fig. 36-1)

Grasp the handles and pull them out firmly and completely out of BCD.
(See Fig. 37-1)

FIG. 33

FIG. 34

FIG. 35

FIG. 36

FIG. 37

NON-DUMPABLE WEIGHT POUCH

Some BCD models have this feature.

WARNING

It cannot be released to provide emergency ascending.
Maximum weight for Non-dumpable Weight Pouch is 2.3kg (5lbs.)

FIG. 38

FIG. 39

Put weight into weight pouches(2 pouches) and secure with Velcro. **(See Fig. 38 & Fig. 39)**

NON-DUMPABLE LABEL

SABA & RABA BC DIN POST AND EMERGENCY CYLINDER

DIN POST

FIG. 40

0.4 litre, 232 bar cylinder

FIG. 41

The SABA & RABA BC fitted with a small cylinder (See Fig 42). The cylinder volume would be 0.4 litres water capacity and 232 BAR working pressure. The emergency cylinder is not intended for routine inflation and should only be used if the main gas supply has been depleted. This Din post (See Fig 40) is used for connecting small cylinders.

DIN POST ASSEMBLY EMERGENCY CYLINDER

NOTE

The post is optional and can carry a 0.4lt cylinder, if the divers main gas cylinder is empty, the diver can open the 0.4lt cylinder and inflate the BCD to take them to the surface, it is only used to fill the BCD in an emergency to ascend to the surface. The air in the cylinder is only air no other gas, it is not used to breathe.

FIG. 43

FIG. 44

FIG. 45

FIG. 46

FIG. 47

FIG. 48

FIG. 49

Make sure that the cylinder holster is empty and your cylinder strap is loose. (See Fig 43)
Slide your cylinder into the holster, whilst doing so make sure that there are no obstructions and that the cylinder fits snug (See Fig 44 and Fig 45)
Slide the cylinder strap through the buckle, looping tightly. (See Fig 46)
Once fitted screw the cylinder into the din post. (See Fig 47 and Fig 48)
This will be what you are looking for once you think you are ready to go. (See Fig 49)

EMERGENCY CYLINDER

1st To equalize the pressure (See Fig 50)

FIG. 50

2nd To open the valve/cylinder (See Fig 51)

FIG. 51

The small metal side rounded part is to equalize the pressure between two cylinders when filling the small cylinder from a larger/main diving cylinder. Fill the cylinder to 232 bar, according to the valve marking is 232 bar.

If you have opted to have the emergency cylinder fitted, the black knob is what opens the air from the cylinder into the BCD, when opening this must be done slow.

3rd To fit the cylinder to the fitting on the BCD (Din post) (See Fig 52 and Fig 53)

FIG. 52

FIG. 53

MAINTENANCE

NOTE

Improper maintenance will void the warranty and cause this product to malfunction.

Your BCD is a reliable piece of equipment that was designed to withstand the rigors of diving. It will last for many years if cared for properly. The following performed actions can lead to extend the life of your BC.

Avoid prolonged exposure to direct sunlight and extreme heat. Plastic and fabric materials can quickly fade when exposed to the sun, and extreme heat may damage the welded seams.

Avoid repeated or prolonged use in heavily chlorinated water, which can cause the BC fabric to discolor and decay premature.

Do not allow the BC to chafe against any sharp objects or rough surfaces that could abrade or puncture the bladder. Do not set or drop heavy objects such as block weights on the BC.

Avoid any contact with oil, gasoline, aerosols, or chemical solvents.

AFTER USE:

Rinse the outside of BCD thoroughly with fresh water.

Fill the BCD one third full with fresh water through the inflator mouthpiece.

Fully inflate the BCD, rotate and shake the BCD to rinse the interior thoroughly.

Drain the water out through mouthpiece.

Fully inflate the BCD and allow it to dry inside and outside.

Slightly inflate the BCD for storage in cool place.

FIG. 53

WARNING

Do not hang the BCD on hooks like this, it will puncture the bladder: **(See Fig.53)**

SERVICE RECORD

Purchase date: _____

BCD model: _____ Serial No: _____

OEM customer: _____

OEM customer phone no: _____

1. Service person signature _____ Date _____
   Notes: _____
   _____
   _____

2. Service person signature _____ Date _____
   Notes: _____
   _____
   _____

3. Service person signature _____ Date _____
   Notes: _____
   _____
   _____

4. Service person signature _____ Date _____
   Notes: _____
   _____
   _____

5. Service person signature _____ Date _____
   Notes: _____
   _____
   _____

6. Service person signature _____ Date _____
   Notes: _____
   _____
   _____

LIMITED WARRANTY

Northern Diver warrants the original purchaser for a year from the date of purchase.

The product will be free from defects in material and workmanship, provided it receives normal use and proper care.

The warranty must be made through Northern Diver or a Northern Diver agent and a receipt must accompany
the product to be returned.

These warranty are limited to repair or replacement at the discretion of Northern Diver.

DISCLAIMER

Northern Diver disclaims and excludes any liability for incidental or consequential damages.

NORMATIVE REFERENCES

EN1809: 2014+A1: 2016
Diving equipment - Buoyancy compensators - Functional and safety requirements, test methods.

Self- contained compressed air diving apparatus- Requirements, testing, marking.

NOTICE

The PPE (Personal Protective Equipment) mentioned in this User's Manual was assessed by ITALCERT – Viale Sarca 336, 20126 Milano ITALY, Notified body n° 0426.

This device is in compliance with EN 1809:2014+A1:2016
(PPE belonging to category II)

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