Operation and Maintenance Manual

for the

AH5 Helmet

(Part No: DD030342)

A part of

James Fisher and Sons plc

Marine Services Worldwide

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Preface

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NATIONAL APPROVALS AND MARKINGS:

AH5 HELMET MARKING: CE 0088

Divex Limited declares that this Personal Protective Equipment is in conformity with the provisions of Articles 10 and 11 of the EUROPEAN DIRECTIVE 89/686/EEC as a CATEGORY 3 DEVICE, and is manufactured under a Quality System approved by Lloyd's Register Q.A. (Notified Body No. 0088).

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Table of Contents

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Chapter 1 - Product Code Numbers & References

Contents

1.1 Product Code Numbers & References

The numbers which follow component part descriptions in the text are the reference numbers used on the exploded drawing at the back of the manual.

These reference numbers and their corresponding full product code numbers are listed on two pages preceding the exploded drawing. When ordering components, it is important to specify the product code numbers and, if possible, the full assembly part number and the serial number from the label inside the helmet.

Main Features of the Divex AH5 are:

1. Silenced air supply
2. Emergency air inlet valve
3. Main air inlet valve
4. Suit inflation port
5. Streamlined neck ring assembly
6. Simple double-action latch
7. Weighted G.R.P shell
8. Binding posts for communications
9. Waterproof communications connector
10. Adjustable pressure exhaust valve with head operated button
11. Two viewports for excellent vision
12. Lower neck ring suitable for neck seal or attachment directly to dry suit yoke
13. Easy to dress
14. Comfortable parachute-style harness

Chapter 2 - General Information

Contents

2.1 Introduction

The Divex AH5 was developed from the General Aquadyne AH2 air hat, a helmet which had been supplied to commercial divers since the late Sixties. Originally introduced by General Aquadyne Inc. of Santa Barbara, California, the AH2 helmet design, patents and tools were purchased by their British distributor Underwater Instrumentation Ltd in 1979. This company supplied a large number of AH2 helmets to commercial divers - civil, offshore, scientific and government departments. It is our intention that the Divex AH5 will improve the performance available from free flow helmets.

2.2 Scope of Manual

The purpose of this manual is to explain the operation and maintenance of the AH5. No attempt is made to cover the principles of diving. National regulations and recommendations should be observed. Users should be qualified commercial divers.

2.3 General Description

The Divex AH5 is designed for air range diving - down to 50 metres - (165 feet) - with air supplied by an umbilical. This umbilical should comprise at least an air supply hose, communications cable and safety line. The diver receives a constant flow of air whilst the helmet main air valve is open, and the surface supply of breathing air is connected and supplied at adequate pressure.

There is no demand system to add potential breathing resistance. The diver is totally free to move his head within the helmet as there is no oral-nasal mask, face seal or mouthpiece and the helmet is not clamped to the diver's head.

The Divex AH5 covers the whole of the diver's head, so that the entire head remains dry. It is sealed either with a neoprene neck seal (DD030091) or attached directly to some types of dry suit.

Communications are excellent because there is no oral-nasal mask, the communications transceivers (DD030024) are in a dry environment, and there is a silencing system for the inlet air.

The main body (DD030001) is corrosion resistant glass-reinforced plastic (GRP), made with multiple layers of glass mat and strengthened additionally at key points to provide a very strong shell. Mass is added within the GRP at certain points to achieve good balance and comfort.

Two view ports are provided. For normal use the large Front port (DD030076) provides excellent vision. Since the diver is free to move his head within the helmet, he can also see through the top port (DD030073), which is helpful for example when crawling, swimming, guiding descending equipment, and ascending. It means that the diver does not have to constantly change the position of the helmet in the water, as is necessary with most helmets.

Surface supplied air enters the helmet via a check valve located on the rear of the inlet valve assembly. This air is then directed to the main air valve located on the front of this assembly (DD030163). From there it passes through the inner diffuser (DD030140) to the outer diffuser (DD030141) and then flows into the helmet via the directionally adjustable deflector (DD030142).

An emergency air inlet valve (DD030167) is positioned on the side of the inlet valve assembly (DD030154). Air from the emergency valve bypasses the main air valve and flows directly through the diffusers (DD030140 & 141) into the helmet.

Breathing air is exhausted automatically. The exhaust valve vents circulated air from the helmet whenever internal helmet pressure is great enough to overcome both the ambient water pressure and the spring force acting on the poppet valve (DD030061).

The diver can adjust the internal helmet pressure by turning the exhaust valve knob (DD030054). Internal pressure can be reduced quickly by means of the head button (DD030066) located inside the helmet. Pressing this button with the head mechanically unseats the exhaust valve to vent down helmet/suit pressure without having to change the automatic exhaust valve setting.

When the AH5 is fitted directly into a dry suit the diver can control his buoyancy simply by adjusting the helmet valves to achieve negative, neutral or positive buoyancy.

Communications are via two transceivers (DD030024) housed in recesses at each side of the helmet. These transceivers are wired in parallel to the inboard end of two binding posts (DD030019). If supplied without a waterproof four-pin connector (DD030027), the communications feed through is fitted but plugged with a blank (DD030144), sealed by an 'O' ring (DD030101) and retained by a nut (DD030014). This facilitates the later addition of a waterproof connector.

The neck rings are manufactured from Aluminium bronze (AB2), widely used for marine applications because of its corrosion resistance, hardness and wear resistance. The two parts are sealed by an 'O' ring (DD030081) and mated by segmented threads. A simple, strong, double-action latch firmly locates the assembly in the mated position (DD030082, 83, 84 & 85). The lower neck ring is externally grooved with lower edge lip to facilitate attachment to certain dry suits or to a neck seal (DD030091). The neck seal, or dry suit is attached with a clamp band assembly (DD030088).

The AH5 is a positively buoyant helmet, kept in position by wearing a parachute-style harness (DD030106) with two jocking straps. The straps are also used to adjust the helmet to the preferred horizontal position. The AH5 lower neck ring has two permanently fixed, self-centering 'D' rings (DD030094) to locate on the harness (DD030106).

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Chapter 3 - Principles of Operation

Contents

3.1 Principles of Operation

The Divex AH5 is designed for use with air supplied by umbilical, which should consist of at least a separate air line, a communications cable and a safety line. The helmet should not be used with air supply limited to diver-carried compressed air cylinders.

3.2 Life Support System

The Divex AH5 operates on a free flow of breathing air, that is, with the diver receiving a constant flow of air. There is no demand valve system.

The breathing air is passed by the umbilicals air line into the helmet via a check valve positioned at the side of the helmet. This air is routed via the main air valve, through diffusers (DD030140 & 141) and into the helmet via the directionally adjustable deflector (DD030142) situated to the side of the front port (DD030076). The deflector is normally set to direct air over the front port to act as a demister. It also reduces the chilling effect of the air flow on the diver's cheek.

The exhaust valve automatically discharges circulated air into the water when the internal helmet pressure is great enough to overcome the ambient water pressure plus the spring force acting on the poppet valve (DD030061). The external knob (DD030054) on the exhaust valve is diver adjustable to regulate the spring force acting on the poppet valve (DD030061).By operating this knob, the diver can set the internal helmet pressure between about 0.25 and 1.5 psig (0.02 - 0.10 bar) over ambient. Additionally the head button (DD030066) on the inside of the helmet can be used to rapidly vent down the helmet/suit pressure without altering the preferred exhaust valve setting.

Emergency air supply should be by a diver-carried compressed air cylinder, fitted to either an independent safety harness which may include tool 'D' rings and weight pockets, or to a separate back pack. The cylinder must be fitted with a high quality, high flow, scuba first stage regulator, with high-pressure gauge and whip. The regulator outlet should be within the range of 120 - 200 psi (8.3 - 13.8 bar). Most scuba regulators are set at around 125 psi (8.6 bar). An over pressure safety valve must be fitted to a low pressure outlet of the first stage regulator. This is essential as, if there is a leakage through the first stage regulator when the emergency valve on the helmet is turned off, the emergency supply whip will over pressure and may burst. The whip is connected to one of the low pressure regulator outlets and, at the other end, to a 9/16" UNF fitting (DD030051) on the inlet valve assembly (DD030154). Should the main air supply fail, the emergency air valve (DD030167) on the inlet valve assembly should be turned on and the flow set by adjustment of this valve. The helmet's check valve will, at the same time, stop any reverse flow of air via the main air inlet (DE079). It is extremely important that this check valve operates correctly, otherwise, a breakage or hose rupture will result in immediate and rapid reduction of pressure within the helmet, and also cause rapid depletion of the emergency air supply.

3.3 Communications

The helmet has two removable transceivers (DD030024), each housed in a flexible cup (DD030023) within the ear pod recesses of the helmet. These units are both waterproofed and pressure balanced. Their quality is far superior to that of dynamic microphones with paper or plastic cones, they will last much longer and give excellent communications. They are wired in parallel and connected to binding post terminals (DD030019) within the helmet.

Connection to the umbilical communication cable is either via binding posts (DD030019) or moulded waterproof connectors (DD030027).

The units are always wired in parallel for use on a two-wire system that is with press-to-talk operation of the surface diver amplifier.

3.4 Flexibility of Use

The helmet can be locked directly into many dry suits by fixing the yoke of a dry suit onto the lower neck ring of the helmet. In this configuration the diver is completely protected from polluted waters, and can insulate himself from the cold by wearing as much underwear as the suit will accommodate. Additionally, since the airspace in the suit is connected directly with the airspace in the helmet, the exhaust valve can be used to vary the air over pressure in the suit, and hence the buoyancy provided from within the suit. This requires experience.

Alternatively, the helmet can be worn independently of any suit, with its own neck seal (DD030091).

Harness (DD030106) is essential to control the effect of buoyancy on the helmet and to adjust the relative attitude of the helmet to the diver’s body.

3.5 Flooding

The exhaust valve control allows the diver to vary the pressure within the helmet between approximately 0.25 and 1.5 psig (0.02 - 0.10 bar) over ambient water pressure. Provided sufficient air flow and pressure is maintained water should not enter the helmet. If however, water does enter, it can be expelled by tilting the helmet until the exhaust valve is at the lowest point then, increasing the air flow with the main inlet valve and activating the head button (DD030066).

3.6 Noise Protection

When sufficient air is supplied to the AH5 helmet to maintain a maximum CO2 level of 0.5% SEV, the internal noise level of the helmet exceeds the minimum requirements of HSE Noise at Work Regulations 1989 NaWR. 90 Db (A) noise level allows 8 hours duration (max) = 480 mins.

Although these regulations do not apply specifically to noise in a hyperbaric environment Divex recommend the following:

1. Ear protection is provided, which is to be worn by the diver for the duration of the diving operation.

Note
The ear protector provided must allow equalization of pressure to the diver's ear and must not restrict communications with the diver.

2. The divers working time in the water is to be restricted to that of the following tables, The maximum expected work rate is to be selected. It is not permitted to extend the dive time by using a combination of work rates, only one dive time can be used in any 24 hour period.

Note
In the following tables the time at depth depends on the air supply (flow rate) to the helmet/ diver and hence work rate, consequently the operator shall provide means of measuring the air supply to the diver.

3.7 AH5 Air Helmet Dive Tables – Without Use of Ear Protection

Depth Metres	Feet	Ventilation Rate Std L/min (Min.)	Noise Level dB(A)	Dive Duration Minutes
5	16	170	94	190
10	33	250	97	95
15	49	310	97	95
20	66	370	98	75
25	82	425	98	75
30	98	485	98	75
40	131	600	98	75
50	164	730	99	60

Table 3.1 Light Work (22.5 rmv)

Depth Metres	Feet	Ventilation Rate Std L/min (Min.)	Noise Level dB(A)	Dive Duration Minutes
5	16	330	97	95
10	33	360	98	75
15	49	450	98	75
20	66	535	100	47
25	82	630	100	47
30	98	720	100	47
40	131	900	100	47
50	164	1100	100	47

Table 3.2 Medium Work (40 rmv)

Depth Metres	Feet	Ventilation Rate Std L/min (Min.)	Noise Level dB(A)	Dive Duration Minutes
5	16	380	97	75
10	33	470	99	60
15	49	580	100	47
20	66	660	101	38
25	82	780	101	38
30	98	890	101	38
40	131	1000	101	38
50	164	1320	102	30

Table 3.3 Medium/Heavy Work (62.5 rmv)

Depth Metres	Feet	Ventilation Rate Std L/min (Min.)	Noise Level dB(A)	Dive Duration Minutes
5	16	400	98	75
10	33	490	99	60
15	49	600	100	47
20	66	720	101	38
25	82	860	101	38
30	98	990	101	38
40	131	1220	102	30
50	164	1500	103	24

Table 3.4 Heavy Work (75 rmv)

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Chapter 4 - Description

Contents

4.1 Helmet Body

The helmet is constructed from multiple layers of glass fibre matting, resin and lead. The unit is very carefully constructed to achieve a good balance and strength. Stainless steel Helicoil screw inserts (DD030002) are fitted to receive the retaining screws for the port frames. The upper neck ring (DD030003) is permanently bonded to the helmet.

4.2 Ports and Frames

The two helmet ports are cut from polycarbonate plate. Port thickness for the port (DD030076) is 3/8" and for the top port (DD030073) 1/4". The ports fit into recesses in the helmet body in which they are sealed on a gasket (DD030072 & 75). Each port is retained by a metal frame (DD030074 & 77), ten screws (DD030078) securing each frame to the helmet body.

4.3 Main Air Inlet Adapter

The umbilical airline is connected to the helmet via an adapter (DE079) which is fitted to the check valve on the air inlet assembly (DD030154).

The external umbilical connection is a 9/16" UNF male, 60° cone seal, to accept the bull-nose fitting and swivel nut most commonly used in the diving industry.

4.4 Check Valve

A brass check valve is used to prevent reverse flow of air from the helmet should there be any failure in the main air supply system.

The check valve is a mounted inside the rear face of the inlet valve assembly (DD030154) with the engraved arrowhead pointing upwards into the helmet, and is retained by the air inlet adapter (DE079). Routine maintenance comprises cleaning with warm water and domestic washing-up liquid, thorough rinsing in fresh water and drying.

4.5 Inlet Valve Assembly

The inlet valve assembly is the diver's control for all air input and the connection point for his umbilical and emergency air. The main air valve knob is positioned at the front of the helmet and is fully adjustable to give the diver control of the main air flow rate into the helmet. The stiffness of valve rotation is adjustable as preferred.

The emergency air knob is positioned behind the main air valve knob on the side of the inlet valve assembly. It gives the diver control of the flow rate of emergency air into the helmet, the stiffness of valve rotation is adjustable as preferred.

The inlet valve body (DD030153) has a 1/4" NPT female inlet for the emergency air supply. The inlet is fitted with an adapter (DD030051) finishing in 9/16" UNF male thread with parallel bore suitable for an 'O' ring seal hose tail. The adapter is fitted with a blanking plug (DD030018), sealed by an 'O' ring (DD030053) and retained by a nut (DD030014) for shipping. These parts completely seal the adapter, and prohibit the ingress of dirt to side valve.

Remove the nut (DD030014) and blanking plug (DD030018) to connect an emergency air supply hose fitted with a 9/16" UNF female thread and 'O' ring seal.

Both valve knobs are retained by two pairs of stainless steel socket setscrews (DD030046). One locates in an indent on the spindle and serves to position the knob. The other locates on the cylindrical surface of the spndle to ensure a rigid connection. Both outer socket setscrews act as locking screws. Use a hexagonal key 5/64" A/F in the socket setscrews. For ease of servicing it is important to keep the hexagonal recess in the top of socket setscrews filled with candle wax or bees wax, to avoid retention of dirt.

The inlet valve body (DD030154) is located in the helmet by a pin and secured with locknut (DD030048).

4.6 Flow Diffusion

The purpose of the inlet diffusers (DD030140 & 141) is to silence the inlet flow and remove any dust particles that may be in the airline.

This is no substitute for effective filtration at the surface.

The diffusers are flat discs of porous material. They are fitted to the valve body using inner and outer circlips (DD030138 & 139) respectively.

It is recommended that diffusers are washed in non-toxic soap or domestic washing-up liquid. After washing very thoroughly, rinse out the unit in fresh water to remove all traces of the washing medium. Do not use any industrial detergents. Blow dry thoroughly with a low pressure air supply hose before re-use.

4.7 Suit Inflation

A suit inflation port, ¼" NPT, is provided on the lower surface of the inlet valve body. This port is plugged for shipping and will not normally be required where the suit is fitted directly to the lower ring. When a separate neck seal (DD030091) is fitted, an appropriate suit inflation hose may be connected.

4.8 Exhaust Valve

The exhaust valve body (DD030063) serves as the housing for the components and is flanged and threaded at one end for mounting to the helmet. A lock nut (DD030065) tightened onto the threaded section inside the helmet secures the installation.

The primary valve is of the poppet type (DD030061) and has a groove machined in the poppet face to receive an 'O' ring (DD030062), ensuring watertight closure.

The poppet valve (DD030061) is held in the closed or seated position by a spring arrangement, the tension of which is controlled by the exhaust valve knob (DD030054) at the outer end of the valve body. The adjustment range is approximately 0.25 to 1.5 psig (0.02 - 0.10 bar) over ambient water pressure.

An override exhaust control is provided by means of a head button (DD030066) attached to the stem of the poppet valve (DD030061) which protrudes into the helmet. The head button (DD030066) may be utilised to reduce the helmet pressure below a given adjustment setting or below the 0.25 psig minimum spring setting.

The secondary exhaust valves (DD030070) are of the mushroom-type and are installed in series with, and downstream of, the primary exhaust valve outlet. The secondary valves prevent water from entering the helmet through the open primary valve during the exhaust mode, regardless of diver orientation.

4.9 Communications

Two-way communications are provided by two transceivers (DD030024), housed within removable cups (DD030023) which locate in the two ear pods of the helmet body.

The transceivers (DD030024) are water resistant, and have a hole in the rear to enable the units to pressure compensate. They are wired in parallel with two-core cable to the inboard end of the binding posts (DD030019). The bare ends of the conductors are soldered to eyelets and fixed between two pairs of nuts on connector posts at the back of each transceiver (DD030024). The wiring (DD030021) from the left transceiver passes through a pre-cut channel in the nose pad (DD030079) adjacent to the shell (DD030001), under the inlet valve duct and then directly to the binding posts (DD030019). The right transceiver cable is routed vertically downwards to contact the left-hand-side cable then rearwards to the binding posts.

At this end, the two eyelets (DD030020) each have connected to them one core from each cable, and are fixed one to each binding post (DD030019) by a single brass nut.

Also available as an option is a rubber moulded four-pin male connector (DD030027) which enters the helmet via a feed-through where a 9/16 UNF nut (DD030014) and two 'O' rings (DD030028) keep it secure and watertight, Inside the helmet two of the connector wires are fitted with eyelets (DD030020) and are connected one to each binding post (DD030019).

The connector (DD030027) is wired using the contact pins 1 & 3 (12 and 6 o'clock).The wires from pins 2 & 4 (3 and 9 o’clock) are cut back inside the helmet.

When the communications connector (27) is not fitted, then the feed-through is fitted with a blanking plug (DD030144), sealed with 'O' ring (DD030101) and secured by a nut (DD030014).

4.10 Neck Ring Assembly

The neck ring assembly is designed to provide a quick mating or separating of the helmet whereby a positive mechanical connection and watertight seal are obtained.

The locking arrangement is simple, using the segmented thread system which has been successfully used over many years. A turn of 42 degrees fully engages the rings.

The upper neck ring, the female half of the coupling, is bonded onto the base opening of the helmet. There is a large flat sealing surface, protected by a raised outer rim, on the bottom of the upper neck ring.

In the outer rim there is one vertical channel which locates the helmet latch pin (DD030083).There are also two tapped holes to which the countersunk head socket screws (DD030086) holding the latch body (DD030082) are fitted.

The lower neck ring, the male half of the coupling, carries above its interrupted threads a flat section with an 'O' ring groove and an 'O' ring (DD030081) which seals against the bottom face of the top neck ring. On both front and back of the lower neck ring (4), milled lugs are provided which serve to locate the harness attachment 'D' rings (DD030094).

These lugs are located to accept a length of 3/32" (4 mm) diameter stainless steel cable (DD030092) which is also passed through the centre of two cable sleeves (DD030102) and a sliding stainless steel 'D' ring (DD03094). Each cable end is securely held by crimped cable stops (DD030093).

The lower neck ring is machined with a lip at the bottom. Over this lip, the AH5 neck seal (DD030091) or neck opening of a dry suit is fitted and clamped on the ribbed surface.

The outer diameter of the lower ring has a machined vertical groove to locate a latch pin eccentric head (DD030083). Adjacent to this is a stop pin (DD030087) to prevent the helmet being over-tightened during dressing.

To facilitate correct engagement of the neck ring threads when dressing, each ring of the helmet is marked with a coloured alignment dot. When these two dots are aligned, the segmented threads are free and the rings mated or separated.

4.11 Latch Assembly

The latch assembly is a positive, double-action system designed to ensure that the helmet locking seal is not accidentally breached.

1. It is important that the latch lever (DD030085) is in the open position, not flush with the latch body (DD030082) before attempting to position the helmet on the lower neck ring.

2. The latch mechanism will close only when the helmet is fully locked to the lower neck ring.

3. To protect the latch assembly from damage, the latch lever (DD030085) should be in the closed position at all times other than when mating the helmet with the lower neck ring.

After mating of the helmet rings, rotate the helmet clockwise (viewed from above) about one-eighth of turn (actually 42 degrees), then close the latch lever (DD030085). As it closes, the latch bar (DD030083) will engage in the slot adjacent to the stop pin (DD030087) on the lower neck ring.

When detaching the helmet from the lower neck ring, it is first necessary to push the latch lever (DD030085) upwards to a stop before opening it outwards.

The lever (DD030085) is locked into the latch bar (DD030083) by two socket setscrews (DD030046), hexagonal key size 5/64" A/F (2 mm), that bear on a flat on the lever stud (DD030085). For ease of servicing it is important to keep the hexagonal recess in the top of socket setscrews filled with candle wax or bees wax, to avoid retention of dirt.

The latch body is fixed to the upper neck ring by two countersunk head socket screws (DD030086). A hexagonal key size 5/32" A/F is required for fitting.

4.12 Neck Seal

The conical shaped neck seal (DD030091) is fabricated from double nylon lined foamed neoprene. Seams are joined with neoprene cement then stitched for added strength. The larger opening of the neck seal is fitted over the wide ribbed band in the lower neck ring where it is clamped in place with a single clamp band assembly (DD030088). The double thickness neoprene bead provides a positive stop for the clamping.

If required, the neck seal can be glued and stitched directly to some dry diving suits.

4.13 Harness System

The harness (DD030106) is the means by which the helmet is held in position for diver comfort and versatility. The only parts of the harness system attached to the helmet lower neck ring are two sliding 'D' rings (DD030094), each retained by a short length of stainless steel cable (DD030092).

The harness (DD030106) completes the system. It comprises:

1. A waist belt, tightened by stainless steel double 'D' rings, to which the various parts are attached.

2. Two leg straps, each fixed to the waist belt at one point only on the outside of each leg.To dress, each strap is fed across the back of its respective leg, under the crutch, and continues around the same leg over the front, returning to the starting point. Here it is attached to and adjusted to length by an adjustable 'D' which is itself permanently secured to the waist belt.

3. Two locking straps, one front and one back, are fixed to the waist belt by webbing loops, and are free to self centre on the waist belt. Each has an adjustable snap which locates in the 'D' ring of the helmet lower neck ring.

4. One large safety 'D' ring which is permanently fixed to the waist belt on the diver's right hand side. This is for umbilical tie-off or tools.

4.14 Nose Pad

A pad (DD030079) is located along the lower rim of the helmet below the front port (DD030076). It is made with multiple layers of foam neoprene, with wedges cut out of the first layer, to take up the angle of the helmet surface, and through which the transceiver harness wire (DD030021) is run. This pad may be repositioned and reshaped for diver preference.

4.15 Headliner Pad

A rectangular shaped pad (DD030080) of lined neoprene is fixed to the top inner surface of the helmet, to provide a cushioning effect when the helmet is worn out of the water. Additional padding can be glued around the inside of the helmet to suit divers' individual preferences. If this is done, allow several hours for the glue to cure and for harmful fumes to disperse.

Chapter 5 - Operating Instructions

Contents

5.1 Operating Instructions

The advice in this section is for guidance. Different diving situations will affect in detail the way in which the Divex AH5 is used. Always have a stand-by diver and always connect an independent diver-carried emergency air supply system. It is recommended that the diver familiarise himself with the AH5 in quiet water before going on his first job with the helmet.

5.2 Surface Air Supply Requirements

The AH5 must be used with surface supplied air from an air compressor, regulated bank of air cylinders or both. The flow rate must be high enough to ensure sufficient ventilation at the working depth to prevent the carbon dioxide level in the helmet from rising above safe limits. A safe rate will be between approximately 3 and 6 ambient cubic feet per minute (acfm), depending on the workload and breathing levels.

The pressure must be sufficient to overcome the water pressure at the diver's depth, plus pressure loss in the air supply system. As a rule of thumb, allow 60 psi (4.2 bar) over bottom pressure for depths up to 120 feet (36.6 metres). For depths greater than 120 feet add 100 psi (6.9 bar) over bottom pressure.

5.3 Pre-dive Checks

Inspect the helmet and harness (DD030106) for general condition and functions. Check that all fittings are securely attached to the helmet, that the valve controls operate smoothly and that the silencer housing (DD030037) is set to direct air in the diver's preferred direction.

5.3.1 Lower Neck Ring Check

Check that the neck seal (DD030091) or suit yoke is positioned correctly on the lower neck ring. When a neck seal is fitted, the bead is positioned so that it folds back over the entire clamp band (DD030088). Check that the clamp band is securely tightened. Foam neoprene does compress over time, requiring the clamp band to be re-tightened.

Check that the 'O' ring (DD030081) is clean and free of embedded particles, that the slide cable (DD030092) is in sound condition with the cable crimps (DD030093) firmly fixed and the cable sleeves (DD0300102) in tact.

5.3.2 Exhaust Valve Check

Check that the exhaust knob (DD030054) turns freely through the full range of adjustment, and that the head button (DD030066) also operates smoothly throughout the adjustment range. To ensure correct operation, these checks should be carried out again after the helmet is put on the diver.

5.3.3 Location Latch Check

Put latch lever (DD030085) in the closed/locked position. Then check that it can be moved smoothly upwards against the pressure of the latch spring (DD030084). While the lever (DD030085) is still held upward, check that it can be smoothly swung open to the unlocked position. If the latch mechanism is sticky then clean the assembly and apply a small amount of lubricant or WD40 spray. Take care not to get any spray on the helmet face ports.

5.3.4 Check Valve Test

Test that the check valve is operational.

	WARNING
	This is a critical piece of safety equipment, no diving should be undertaken if it is faulty.

Method:

Open the helmet main air valve. Try to **inhale** through the main air inlet adapter (DE078). When the check valve is functioning correctly there will be **no** inhalation. If in doubt then carry out the following procedure:

1. Purge air supply hose to ensure system cleanliness.
2. Connect air supply hose to main air inlet adapter (DE079), and apply 100-150 psig air pressure to helmet.
3. Open helmet main air supply valve, verify air flow in helmet, then close this valve.
4. Purge air from the supply hose and then remove from helmet.

5. Submerge the air inlet adapter (DE079) in a small container of water and look for bubbles. If bubbles escape then the check valve is not functioning correctly. For maintenance and repair to check valve refer to Section 5.4.

6. Open helmet main air supply valve and verify venting of air trapped downstream of the check valve.

5.3.5 Communications Check

The best method is to connect the helmet to a surface diver phone and check function with an assistant.

Alternatively, without assistance, connect up with the surface phone (DD030024) one at a time. Each should be heard from the surface phone. To check communications in the reverse direction, talk into the surface speaker whilst feeling within finger tip each helmet transceiver (DD030024). Vibration should be felt in the transceiver. Another quick method is to induce feedback between the helmet and surface phone, which will confirm the correct function of at least one of the two helmet transceivers.

5.3.6 Breathing System Check

Blow through the umbilical to clear out any dirt, and then connect the air line to main air inlet adapter (DE079).

	**WARNING**
	Always use the correct size spanner and do not over tighten.

Do up hand-tight plus a quarter turn. Do not tighten the 9/16" nut with stilsons!

Turn the emergency air valve off.

Open the main air valve and check that the flow level is regulated by adjustment of this valve and that there is no flow when the valve is turned off.

5.3.7 Emergency Air Supply Check

Check the pressure in the diver-carried emergency air supply. Always use a full cylinder of adequate capacity for the planned dive. Remember that the diver will need between 3 and 6 acfm (ambient cubic feet per minute).

5.3.8 Front Port Seal Check

After delivery and/or storage and prior to any use the front port screws are to be checked for tightness using a torque spanner set at 12 in/lbs.

5.4 Helmet Dressing Procedure

Every assistance should be given to the diver whilst he is being dressed and as he moves around after dressing. He will expend a lot of energy moving around with all his equipment at the surface.

The precise order of dressing and after-dive procedure will be dependent on the method of use of the helmet, whether it is to be worn with its own independent neck seal (DD030091), or with the lower neck ring attached directly to a dry suit.

When used with independent neck seal:

1. Fit the diver's AH5 harness (DD030106). Begin by fitting the waist band with the double 'D' buckles on the diver's left hand side, the long leg straps running vertically down the diver's legs and the parachute legging adjusters angled down from the waist belt. From the outside of each leg take the leg strap and feed it across the back of the same leg, under the crutch and continue around the same leg over the front, returning to the starting point. Fit to the adjustable 'D' buckle on the waist belt. Leave hanging down the two jocking straps which are suspended from the waist belt.

2. Pull the lower neck ring assembly over the diver's head ensuring that the red location dot is on the diver's left side.

3. Adjust the neck seal (DD030091) to suit personal preference. The neck seal can be worn in two ways. If the seal opening is a little too large or loose, the edge can be turned in (similar to the way in which the wrist cuffs on deep-sea dress are turned in) and pushed up on the neck to give an adequate seal. When worn this way, any water collecting in the resulting pocket of the neck seal (DD030091) around the neck will have to be purged through the exhaust valve. Alternatively, with the edge of the neck seal pointing downwards, any excess air will blow out of the bottom of the seal, and moisture or water in the helmet will also be expelled.

4. Fasten both harness straps' adjustable snaps to the 'D' rings on the lower neck ring.Tension the rear harness straps at this time with the diver keeping hold of the lower neck ring, to keep its position horizontal.

5. Fit the emergency air system - comprising cylinder, first stage scuba regulator, pressure gauge and whip, safety valve and supply whip, all connected to a backpack or safety harness.

6. Fit weight belt, if weights are not incorporated into a safety harness system.

7. Ensure that the umbilical airline and telephone cable have been connected to the helmet. Turn on the AH5 main air supply valve to give a good flow to the diver. Then fit the helmet to the diver as follows:

   Open the latch lever (DD030085) on the helmet before the helmet is placed over the diver's head. To assist the attendant fitting the helmet, the diver should lift the lower neck ring at the front bringing it to the horizontal position. When the helmet is over the diver's head, position the two red location marks in line, then seat the helmet on to the lower neck ring. The location marks are near the diver's left shoulder. Turn the helmet clockwise until the latch bar (DD030083) lines up with its recess in the lower neck ring.The stop pin (DD030087) in the lower neck ring will prevent the helmet being turned too far. Then close the latch lever (DD030085) causing the latch bar

(DD030083) to lower into a recess in the lower neck ring and lock in the closed position.

8. The diver should now check that the air supply is on, that the main air valve is functioning and that a high flow of air is delivered when the valve is fully open.

9. Operate the head button (DD030066). The diver should notice an immediate but temporary reduction in internal air pressure.

10. Carry out a check of the communications in both directions and adjust the surface phone volume controls. Set the diver's listening level a little high so that the diver will still hear clearly over the additional bubble noise on entering the water.

11. Connect the emergency air whip to the adapter (DD030051) on the inlet valve assembly. Ensure that the emergency valve is in the off position. Then turn on the emergency air supply at the cylinder valve, to give air pressure up to the emergency air valve and check the emergency air cylinder pressure. The diver should now check the emergency air supply by first turning the helmet's main air valve off, and then opening the emergency air supply valve, when a smooth flow of air should resume. Then turn off the emergency air valve and re-establish main-air supply.

12. Connect the umbilical safety line snap hook to the diver's harness in such a way that no load put on the umbilical or diver will be taken up by the helmet's inlet adapter (DE079) and umbilical connections.

13. The diver is now dressed in the helmet. Just before moving off and entering the water, final jocking adjustments should be made. The tender should pull down firmly on the front strap. The diver will usually be more comfortable if this is done before entering the water.

    When used fitted to a dry suit:

    Dressing procedure is much quicker when the helmet's lower neck ring is left permanently attached to a zip entry dry suit.

    Dressing procedure is the same as when used with an independent neck seal (DD030091), except that the lower neck ring is in place whenever the suit is on.

5.5 After-Dive Procedure

The surface tender should give the diver every assistance when he returns from the water, including help in negotiating ladders.

After completion of the dive, if weights are carried in a separate belt, remove the weight belt, then release the helmet. First, disengage the latch bar (DD030083) by pushing the latch lever (DD030085) upwards, and then swinging it outwards. Next, turn the helmet anti-clockwise (viewed from above) until the location dots on each ring line up over the diver's left shoulder. The helmet should then be carefully removed from the diver's head.

Turn off the main air supply at source and the valve on the diver-carried emergency air cylinder. Open both the helmet's main air and emergency air valves to bleed residual pressure in the two hoses. Disconnect the emergency air whip, communications cable and main air hose from the helmet. If the helmet is being used with a neck seal (DD030091) then disconnect the harness (DD030106) from the sliding 'D' rings (DD030094) and allow the diver remove the lower neck ring from his head.

Wherever practical at the worksite, keep the helmet and lower neck ring as an assembled unit, with the latch lever (DD030085) closed.

Before long term storage, the harness (DD030106) and lower neck ring assembly should be rinsed in warm fresh water, wiped clean and dried. Clean the outside of the helmet in fresh water, particularly the exhaust valve assembly, and wipe with a damp cloth the inside of the lower neck ring sealing surfaces, and the lower neck ring 'O' ring. Note any items requiring maintenance. The outer surface may be polished with a household furniture polish.

5.6 Emergency Procedures

Practice emergency procedures before using the equipment for the first time. Always plan for possible emergencies.

5.6.1 Flooding

Provided sufficient air flow and pressure are maintained, water should not enter the helmet. Partial flooding of the helmet can be quickly cleared through the exhaust valve by tilting the helmet until the exhaust valve is at the lowest point.

The water will be cleared more quickly if the air flow into the helmet is increased and the exhaust valve head button (DD030066) activated.

5.6.2 Main Air Supply Failure

Never use the AH5 without a diver-carried emergency air supply of adequate capacity. Prior to diving, the emergency supply system should be checked. The emergency air cylinder valve should be left in the on position and the emergency air whip pressurised through to the helmet emergency air inlet valve which should be in the off position.

If the main air supply fails, turn on the emergency air inlet valve knob and set it to give the minimum safe flow of air and reduce diver exertion to the minimum so as to conserve air. Advise the surface immediately of the situation and plan to terminate the dive. Start ascending to the surface or the first decompression stop.

The pneumofathometer hose can be used as an additional source of emergency air by insertion under the neck seal (DD030091) or under a suit cuff as appropriate then request continuous supply.

5.6.3 Suit Blow Up

When the AH5 is locked directly into the dry suit then the possibility of blow-up exists.

The diver needs to guard against:

1. Rapid increase in buoyancy caused by the diver going from head-up to feet-up position, since the exhaust valve will then be positioned below the suit so that the whole suit will inflate before the exhaust valve will automatically vent through over pressure.

2. Unnoticed gradual increase of suit inflation caused by clogging of the exhaust valve.

The potential for buoyancy increase is governed by the looseness and expansion capabilities of the suit. Control the potential expansion of the suit leggings with laced boots, leg straps or automatic over-pressure relief valves. Use weighted boots and/or leg weights to encourage stability with a feet down attitude.

When diving in particularly muddy or silty waters operate the head button (DD030066) at regular intervals to prevent clogging of the exhaust valve.

At the first sign of over-inflation, operate the head button (DD030066) and assume a head up position to vent down suit pressure. Should a blow-up occur then close the main air inlet valve, use the head button (DD030066), and vent from a suit cuff held above the head.

5.6.4 Rapid Loss of Buoyancy

Should this happen when the AH5 is locked into a dry suit then completely open the air inlet valve and adjust helmet exhaust valve to give maximum over pressure.

The pneumofathometer hose can also be used as an emergency source of air by insertion under the neck seal (DD030091) or under a suit cuff as appropriate then request continuous supply.

Chapter 6 - Repair and Maintenance

Contents

6.1 Repair and Maintenance

Maintenance schedules will differ according to the type of diving work being undertaken. We offer the following guidance as to what may be a suitable maintenance procedure.

For details of how to maintain each assembly, refer to the relevant Section(s) within section 6.4 to section 6.16.

It is imperative that the helmet in a good operational condition.

Always use the correct tools.

Spanners of the wrong size, adjustable spanners, Mole wrenches, Stilsons and similar inappropriate tools can cause serious problems. Because they are ill-fitting they will round-off nuts and if they offer excessive leverage, they can overstress threads. Using hexagonal keys of the wrong size will quickly deform recesses in socket screws making them extremely difficult to extract.

6.2 Daily Maintenance

1. Inspect the helmet inside and out for any obvious damage.

2. Inspect the neck seal (DD030091) for damage and check that it is securely clamped to the lower neck ring.

3. Check all moving parts for smooth function - the main air inlet and emergency valves, the exhaust valve knob (DD030054) and head button (DD030066) and the latch lever (DD030085).

4. Check the check valve by blowing in one direction, and then trying to suck back.

5. Check that both transceivers (DD030024) are securely fixed inside the helmet and that, if fitted, the pins of the communications connector (DD030027) are straight.

6. Visually check the lower neck ring 'O' ring (DD030081).

6.3 Three Monthly Maintenance

1. Remove and clean air inlet adapter (DE079) and check valve components. Replace 'O' rings RN4016-7 & RN804-7. Re-assemble and re-test.

2. Dismantle the exhaust valve and clean all components. Replace the mushroom exhaust valves (DD030070) and the poppet valve 'O' ring (DD030062). Re-assemble and test. Refill socket setscrew recesses with candle or bees wax.

3. Replace 'O' ring (DD030081) in lower neck ring.

4. Dismantle inlet valve assembly. Clean valve body (DD030154), and inspect the main air inlet valve spindle/seat assembly (DD030176) and emergency air inlet valve spindle/seat assembly (DD030044). Lubricate with molybdenum disulphide grease. Re-assemble and test. Refill socket screw recesses with candle or bees wax.

5. Clean and test inlet diffusers (DD030140 & 141) for obstruction. If cleaning is not completely successful, replacement is necessary.

6. Check that both transceivers (DD030024) transmit and receive clearly and that the units are securely fixed in the helmet. If a communications connector (DD030027) is fitted, check that its pins are straight, and the cable connections to the binding posts (DD030019) are sound.

7. Remove the latch lever (DD030085), latch bar (DD030083) and spring (DD030084) from the latch body (DD030082). Clean all latch assembly parts. Apply a light smearing of silicone grease to the moving parts, replace and test for positive locking action and a smooth movement. Refill the latch bar (DD030083) socket setscrew recess with candle or bees wax.

8. Check neck seal (DD030091) for condition and repair/replace as necessary.

9. Check, repair or replace as necessary the harness (DD030106) webbing, stitching and buckles and the sliding 'D' ring (DD030094) assembly on the lower neck ring.

10. Inspect the helmet generally for any other damage and repair.

11. Finally connect communications line, main-air and emergency air supplies and test all functions in the dry.

6.4 Ports

The polycarbonate material used in the two ports is very strong. However, care should be taken not to use certain solvents which may attack the material. Use only mild detergents or organic soap to clean the ports. Do not contact with silicone spray or any other aerosols, as this will damage the polycarbonate.

6.4.1 Scratch Removal and Polishing

Scratches are normally removed from polycarbonate ports (DD030073 & 76) using acrylic polishing compounds. However, satisfactory results may be obtained using any fine grade polishing compound, toothpaste or jewellers rouge. Small scratches are generally not noticeable when underwater.

6.4.2 Port Replacement

Remove all screws 8-32 UNC (DD030078) from the port frame (DD030074 or 77). The port (DD030073 or 76) is easily removed by lightly tapping from inside the helmet. If a new gasket is to be used then remove the gasket strip (DD030072 or 75) by simply lifting one edge and pulling away. Using a clean rag, wipe away any dirt or grease to ensure a clean surface for the new gasket.

Use a pre-cut replacement gasket (DD030072 or 75). Remove a small amount of the backing strip. Carefully lay the gasket starting from the midpoint of a straight edge of the recess, ensuring that it is maintained flat whilst it is eased into each corner. After laying the gasket all round, overlap the free ends.

Remove protective paper from the replacement port (DD030073 or 76) and install it. Either side can be used. Then infill any gap between the port, the gasket and the helmet shell with any non-setting mastic to eliminate any gap that can collect dirt. Install the port frame (DD030074 or 77) initially by screwing all of the screws (DD030078) into each stainless steel insert (DD030002) until they just begin to bind. Then proceed with care to tighten diagonally opposing screws half a turn at a time, until all screws are tightened down. Port screws are to be checked for tightness using a torque spanner set at 12 in/lbs. Do not over tighten as this may strip the screw insert (DD030002).

If no replacement gasket is available the existing gasket may be re-usable, provided its top sealing surface is kept clean. If the gasket is not sealing effectively, then a temporary seal can be made by applying soft mastic to the top of the existing gasket strip and then replacing the port, frame and screws.

6.5 Check Valve and Main Inlet Adapter

6.5.1 Check Valve Removal

Using a 24mm spanner, loosen the check valve from the inlet valve body assembly (DD030154). Remove the ‘O’ ring (RN4016-7) and check for damage or deformation. Remove the air inlet adapter (DE079) from the check valve body. Visually inspect the check valve for body or thread damage. If signs of damage are apparent, replace the complete check valve.

6.5.2 Check Valve Test

Perform preliminary test of check valve by placing the valve to mouth and verifying ease of flow in direction of arrow on the valve body. Verify that reverse flow is not possible by blowing air through in the reverse direction. Then try to suck air in the reverse direction. If reverse flow is possible the check valve requires servicing using spares kit DD030220 which includes all internal sealing components.

6.5.3 Assembly

Refit inlet adapter (DE079) to Non Return Valve Adaptor (DD030170) Smear 'O' ring (RN4016-7) with a light film of silicone grease and fit in groove on adaptor.

Refit check valve components to helmet inlet valve assembly.

To confirm the check valve has been serviced and refitted correctly, refer to pre-dive checks.

6.6 Air Inlet Valve Assembly

6.6.1 Main Air Valve Bonnet Sub-Assembly
Firstly, the valve seals must be checked for air tightness and correct seating.

Remove wax from the two socket setscrew recesses on the valve knob (DD030045). Using a 5/64" A/F hexagonal key, remove the two pairs of socket setscrews (DD030046) securing valve knob to spindle (DD030044).

Connect emergency air supply to the helmet. Test the valve by turning on the air supply at source and keeping the helmet valve turned off. Use soapy water on the outside of the valve bonnet to check for leakage from the bonded seal (DD401129) and the stem seal (DD030043) in the bonnet assembly.

To test the emergency air valve seat, immerse a small flat-sided object in soapy water and place over the inboard end of the valve body duct and repeat the above test. If bubbles appear, then the valve spindle/seat (DD030174) must be inspected. Remove the seat and inspect it for conditiOn and wear. If the seat is nicked or grooved the spindle/seat assembly should be replaced. If the stem seal (DD030043) leaks, tighten bonnet nut (DD030166) and re-check for leakage. If unsatisfactory after tightening, the stem seal (DD030043) must be replaced. To replace either the stem seal or spindle/seat assembly, use a 21 mm spanner on the gland nut (DD030166), to remove it from the bonnet (DD030164). Then remove the spindle (DD030174) by unscrewing from bonnet then remove the brass bush (DD030104) and stem seal (DD030043) from the bonnet (DD030164). To remove the bonnet assembly (DD030163) and bonded seal (DD401129) from the side valve body (DD030154), use a 1” A/F spanner.

When re-assembling the bonnet, coat the spindle thread (DD030174), bush (DD030104), seal (DD030043) and gland nut (DD030166) with a light film of molybdenum disulphide (MoS2) grease. Insert the spindle (DD030174) into the bonnet (DD030164) and screw in until it bottoms in the bonnet. Then install a seal (DD030043), brass bush (DD030104) with concave side towards the seal (DD030043), and gland nut (DD030166). Fit the bonded seal (DD401129) on the bonnet (DD030164) and install it into the inlet valve body (DD030153).Tighten the gland nut (DD030166) to the point where the spindle (DD030174) cannot be rotated by hand. Fit the valve knob upside down and fasten with socket setscrews using a 5/64" AF Allen key. Repeat the bonnet assembly leak test and adjust gland nut if required ensuring that the valve is operable. Re-fit the valve knob (DD030045) in the correct position using a 5/64" A/F hexagonal key.

6.6.2 Emergency Air Inlet Valve Bonnet Sub-Assembly
Firstly, the valve seals must be checked for air tightness and correct seating.

Remove wax from the two socket setscrew recesses on the valve knob (DD030045). Using a 5/64" A/F hexagonal key, remove the two pairs of socket setscrews (DD030046) securing valve knob to spindle (DD030044).

Connect emergency air supply to the helmet. Test the valve by turning on the air supply at source and keeping the helmet valve turned off. Use soapy water on the outside of the valve bonnet to check for leakage from the bonded seal (DD401129) and the stem seal (DD030043) in the bonnet assembly.

To test the emergency air valve seat, immerse a small flat-sided object in soapy water and place over the inboard end of the valve body duct and repeat the above test. If bubbles appear, then the valve spindle/seat (DD030044) must be inspected. Remove the seat and

inspect it for condition and wear. If the seat is nicked or grooved the spindle/seat assembly should be replaced. If the stem seal (DD030043) leaks, tighten bonnet nut (DD030166) and re-check for leakage. If unsatisfactory after tightening, the stem seal (DD030043) must be replaced. To replace either the stem seal or spindle/seat assembly, use a 21 mm spanner on the gland nut (DD030166), to remove it from the bonnet (DD030165). Then remove the spindle (DD030044) by unscrewing from bonnet then remove the brass bush (DD030104) and stem seal (DD030043) from the bonnet (DD030165). To remove the bonnet assembly (DD030167) and bonded seal (DD401129) from the side valve body (DD030154), use a 1” A/F spanner.

When re-assembling the bonnet, coat the spindle thread (DD030044), bush (DD030104), seal (DD030043) and gland nut (DD030166) with a **light** film of molybdenum disulphide (MoS2) grease. Insert the spindle (DD030044) into the bonnet (DD030165) and screw in until it bottoms in the bonnet. Then install a seal (DD030043), brass bush (DD030104) with concave side towards the seal (DD030043), and gland nut (DD030166). Fit the bonded seal (DD401129) on the bonnet (DD030165) and install it into the inlet valve body (DD030153). Tighten the gland nut (DD030166) to the point where the spindle (DD030044) cannot be rotated by hand. Fit the valve knob upside down and fasten with socket setscrews using a 5/64" AF Allen key. Repeat the bonnet assembly leak test and adjust gland nut if required ensuring that the valve is operable. Re-fit the valve knob (DD030045) in the correct position using a 5/64" A/F hexagonal key.

6.6.3 Cleaning

Connect a low pressure air supply to the main inlet and blow any particles from the inlet valve body. A small brush or cotton cloth may prove helpful in removing particles from this area. Do not use a sharp object.

Clean the complete bonnet assemblies, or all its parts if previously dismantled for maintenance, plus the knobs (DD030045) and socket setscrews (DD030046) in warm soapy water. Rinse in fresh water and wipe dry.

6.6.4 Inlet Valve Body Removal

Should it ever be necessary to remove the inlet valve body assembly (DD030154) from the shell (DD030001), proceed as follows:

Remove the air deflector from the body duct inside the helmet. This is a push fit. Using a purpose-made spanner, slacken and remove lock nut (DD030048). Pull inlet valve body assembly (DD030154) away from the shell taking care not to damage the shell where sealant has formed a bond and where the location pin is fitted.

6.6.5 Inlet Valve Body Replacement

Use Dow Corning silicone rubber compound sealant type 732 RTV or equivalent. Spread generously on the flange of the inlet valve body (DD030153). Leave to stiffen and is dry to touch before fitting to the helmet. Ensure that the locating pin on the inlet valve body (DD030153) is in the locating hole of the helmet. Wipe all sealant off the valve body threads. Refit lock nut (DD030048) from inside the helmet. Wipe away excessive sealant after tightening of the lock nut. Connect air supply and verify air flow.

6.7 Exhaust Valve

6.7.1 Dismantling

Remove wax from socket setscrew recesses. Unscrew the two screws (DD030071) and remove grating (DD030068). Using a hexagonal key size 5/64" A/F, remove socket setscrews (DD030067) to allow disengagement of secondary body. Remove secondary body (DD030069) and remove the mushroom valve (DD030070). Remove inner mushroom valve from the exhaust body (DD030063). To remove the pressure adjustment assembly, withdraw socket setscrews (DD030067) then remove outer assembly giving access to the primary spring (DD030060) and poppet valve (DD030061). Remove poppet valve by unscrewing the head button (DD030066) and remove 'O' ring (DD030062). Rotate the exhaust knob (DD030054) fully clockwise to expose the external circlip (DD030059). Remove the circlip, using appropriate pliers. Remove the knob (DD030054) by unscrewing from the cover nut (DD030055). Remove the internal circlip (DD030058), spring retainer (DD030109) and the secondary spring (DD030056) by inserting internal circlip pliers in the exhaust knob (DD030054) bore and compressing the circlip (DD030058) to remove it. The spring (DD030056) and spring retainer (DD030109) are then free to be withdrawn.

6.7.2 Cleaning

All metal parts can be soaked in white vinegar (acetic acid) for 15-30 minutes. Rinse all soaked parts in fresh water. Use a dampened cloth to wipe clean all parts, including the inside of the exhaust valve body (DD030063), with particular attention to valve seating surfaces.

6.7.3 Assembly

Note
During routine maintenance it is advisable to replace the two rubber exhaust valves (DD030070) and poppet valve 'O' ring (DD030062). Apply a light film of silicone spray to all metal parts. Install the secondary spring (DD030056) (short spring) followed by the spring retainer (DD030109) (large diameter end against the spring) in the exhaust knob (DD03054) bore. Using circlip pliers install the internal circlip (DD030058) in the groove provided within the knob (54) bore. Verify that the circlip (DD030058) is well seated in the groove and that the spring (DD030056) and spring retainer (DD030109) move freely when depressed. Re-thread cover nut (DD030055) onto the exhaust knob (DD03054). Using circlip pliers install the external circlip (DD030059) in the machined groove located at the end of the threaded section of the exhaust knob (DD030054). Verify proper installation.

Apply a light film of silicone grease to the sealing surface only of the two rubber exhaust valves (DD030070). Install both valves in their respective positions by placing the valve tabs through the location holes of the valve bodies, and pulling the free end of the tabs with pliers until the recess in the valve tab locates in the housing body, with the valve firmly held in place.

Install secondary body (DD030069) and secure by screwing in the two socket setscrews (DD030067), using a hexagonal key 5/64" A/F.

Fix in position the grating (DD030068) by using the two screws (DD030071). Apply a light film of silicone grease to 'O' ring (DD030062) and install on the poppet valve (DD030061). Install a poppet valve (DD030061) into exhaust body (DD030063). Hold firmly the poppet valve and screw on head button (DD030066) from inside the helmet. Install the primary spring (DD030060) over the poppet valve stem plunger inside the valve body.

Install the exhaust knob/cover nut assembly ensuring the primary spring (DD030060) enters the knob bore, secure the assembly with the two socket setscrews (DD030067), using a hexagonal key 5/64" A/F.

Refill the socket setscrew recesses with candle wax or bees wax.

Check that the exhaust knob (DD030054) turns smoothly throughout the full range of adjustment, and that the head button (DD030066) also operates smoothly throughout the adjustment range.

Then check that the poppet valve (DD030061) is seating properly. Do this by screwing the exhaust knob (DD030054) fully in and then with the fingers gently try to pull the head button further out into the helmet. There will be no movement inwards if the poppet valve (DD030061) is assembled correctly, with the primary spring (DD030060) holding the poppet valve against its seat.

Finally, to verify the system has been assembled correctly, connect the helmet to an air supply, pressurise the system and fit with the lower neck ring assembly to the person testing the unit. The helmet must be sealed, either by attaching directly to a dry suit or with a neck seal (DD030091).

6.8 Communications

6.8.1 Transceiver Replacement

To remove a transceiver (DD030024) from its position in the helmet ear pod, carefully separate the Velcro fastenings (DD030025) at the back of the transceiver cup (DD030023).

Gently remove the cup (DD030023) from the transceiver (DD030024) and expose the two transceiver connector posts. Remove the top nut from each connector post to disconnect the transceiver (DD030024) from the harness wires (DD030021), and then refit the harness wires to the connector posts of the replacement transceiver (DD030024), one wire to each post, sandwiched between the two nuts. Take care not to block the pressure equalisation hole at the back of the transceiver, and ensure that no stray strand of wire bridges the gap between the two connector posts. Refit the transceiver (DD030024) in the cup (DD030023) and the cup into the helmet ear pod, using the Velcro fasteners (DD030025).

The wire harness (DD030021) connects the two transceivers in parallel to the inboard end of the two binding posts (DD030019). Each binding post is connected to one connector post of each transceiver.

The wiring (DD030021) form the left-hand transceiver (DD030024) passes underneath the nose pad (DD030079) in a pre-cut channel, and then passes under the inlet valve assembly and then on to the binding posts (DD030019). The right-hand transceiver wire runs vertically down to the left-hand cable then follows this line to the binding posts. The two transceivers are connected in parallel and joined by eyelets (DD030020) which are attached to the binding posts by brass nuts.

After re-assembly, test for correct function.

6.8.2 Connector Replacement

The rubber moulded connector is an optional item.

From inside the helmet undo the two retaining nuts securing the connector eyelets (DD030020) to the binding posts (DD030019). Using a 21mm spanner unscrew the gland nut (DD030166).

Pull out carefully the connector (DD030027). When replacing a connector it is advisable to renew the two 'O' rings (DD030028).

For tidiness in the helmet it is preferable that only two of the connector wires are attached to the terminal posts, and that the other two are trimmed back. This trimming is best done before fitting the connector to the helmet. Establish by testing with your umbilical which of the two connector wires is to be used and then trim back the other two. As supplied, the helmet connector is wired using the contact pins 1 & 3 (12 and 6 o'clock).

To install a replacement connector (DD030027) first fit gland nut (DD030166) and 'O' rings (DD030028) to the connector before threading connector into helmet.

Ensure the connector has protruded sufficiently into the helmet to enable the eyelet (DD030020) to be fastened to the two binding posts (DD030019) and then tighten the gland nut (DD030166) using an 21 mm spanner.

Connect one of the four wires of the connector (DD030027) to each of the binding post (19) terminals. On re-assembly of connector, verify that the system functions correctly.

If the connector (DD030027) is not being replaced, then a blanking plug (DD030144) fitted with an 'O' ring (DD030101) is to be inserted into the Feedthrough and gland nut (DD030166).

6.9 Latch Assembly

For periodic maintenance, remove wax from latch pin (DD030083) and extract the two socket setscrews (46), using a 5/64" A/F hexagonal key. Unscrew latch lever (DD030085). This will enable the latch pin (DD030083) and spring (DD030084) to be extracted.

Clean all these parts in white vinegar (acetic acid), rinse in fresh water and wipe dry. Should it ever be necessary, the latch body (DD030082) can be removed by unscrewing the two Allen screws (DD030086) using a hexagonal key size 5/32" A/F.

Inspect the threaded stud of the latch lever (DD030085) and latch bar (DD030083) for any damage. In the unlikely event of either part being bent then it should be replaced.

6.9.1 Re-Assembly

If the latch body (DD030082) is removed, it should be re-attached with two countersunk socket screws (DD030086), using a 5/32" A/F hexagonal key. Apply a light film of silicone grease on the spring (DD030084) and latch pin (DD030083). Insert spring (DD030084) and latch pin (DD030083) into the latch body (DD030082). Replace the latch lever (DD030085) by screwing it into the latch pin (DD030083) until the free end of the lever, when in the locked position, fits the groove in the latch body (DD030082). Then check that the latch pin (DD030083) moves smoothly in all directions within the latch body (DD030082). It may not function correctly if the lever (DD030085) has been screwed in too far. If this occurs, screw the latch lever (DD030085) out one revolution and recheck the latch pin (DD030083) operation.

Check the tension of the spring (DD030084). The latch pin (DD030083) should move instantly downward when the lever (DD030085) is closed. There should be no rattle when the lever (DD030085) is in the closed position. If there is axial movement, then undo the lever, remove that latch bar (DD030083) and replace the spring (DD030084).

When the lever/latch bar adjustment is correct then, with a 5/64" A/F hexagonal key, tighten the first socket setscrew (DD030046) securely up into the latch pin (DD030083), to grip the flat on the latch lever (DD030085). Use the second socket setscrew (DD030046) as a locking screw against the first. Refill the socket setscrew recesses with candle wax or bees wax to keep it free from or dirt.

Recheck that the latch assembly functions correctly and closes flush with the latch body.

6.10 Lower Neck Ring Assembly

Remove 'O' ring (DD030081) from the lower neck ring assembly. Take care not to damage the sealing surface of the 'O' ring groove by pressure from any sharp object. Using a brush or cloth, clean the 'O' ring groove and skirt of the lower neck ring.

Apply a **light** film of silicone grease to the 'O' ring (DD030081).

Install new 'O' ring by placing it flat on top of the 'O' ring groove, so that it is evenly positioned around the entire groove. Then press in a small part at 90 degree intervals around the 'O' ring groove, keeping equal length of loose 'O' ring between the four points. Distribute the rest of the 'O' ring evenly within the groove.

6.10.1 Fitting the Neck Seal

The clamp band (DD030088) used to secure the neck seal (DD030091) is of simple reliable design. The band clamping bolt is just long enough to achieve initial engagement over foam neoprene, as well as working with the thinner non-foam neoprene yokes fitted to some dry suits.

When fitting new, uncompressed foam neoprene neck seals (DD030091) then additional assistance, and/or the use of a length of string will make the job easier.

Begin by placing the wider part of the neck seal (DD030091) around the lower part of the neck ring and then pull the neck seal (DD030091) up until its bead is positioned well above the grooved recess in the lower neck ring.

Place the clamp band (DD030088) around the neck seal (DD030091) with the clamp in a position where it will not foul the sliding 'D' ring (DD030094) or cables (DD030092). Locate the band (DD030088) within the ribbed recess of the lower neck ring.

Then squeeze towards each other the two ends of the clamping band (DD030088) at the same time placing the clamp stud into the location groove on the clamp block retaining bracket.

Fit the clamp block (DD030089) over the stud end and squeeze the clamp band (DD030088) further until the end of the clamping stud is exposed beyond the clamp block (DD030089) and the clamp nut (DD030090) is fitted.

If there is difficulty compressing the neoprene sufficiently, then first check that none of the Neckseal (DD030091) beading has moved under the clamp band (DD030088). For alternative methods to assist in initially engaging the thread of the clamp band (DD030088) see end of this section.

Before finally tightening the clamp band (DD030088) pull the neck seal (DD030091) into its final position, with the bead left above the clamp band so that when it is folded down over the clamp band (DD030088) it will cover the entire band. Then securely tighten the clamp nut (DD030090).

Finally tighten the clamp nut (DD030090) and fold the neoprene beading over the clamp band (DD030088).

6.10.2 Alternative Methods to Engage Clampband

Take a piece of strong twine (about 1 Metre long) and make a small figure-of-eight knot with 2-3" loose end. Pass the free end of the twine around the neck seal (DD030091) and through its loop. Pull it tight back against the loop so that the neck seal (DD030091) is

forced down into the grooved recess of the ring. The twine will prevent the seal moving whilst the clamp band is fitted.

Then fit the clamp band over the neck seal as detailed above, pulling out the twine from beneath the clamp band as soon as the clamp nut (DD030090) is engaged.

6.11 Lower Neck Ring Sliding “D” Ring Assembly

Inspect the sliding 'D' ring (DD030094) for wear on the guide tube and the condition of the cable sleeves (DD0300102) and check that the cable crimps (DD030093) are secure.

The cable (DD030092) will develop a permanent set where the ‘D’ ring has been pulled tight. This is quite normal and acceptable provided the cable strands are all intact. If any are broken then the cable should be replaced.

To replace any part, proceed as follows:

1. Cut off one of the two cable crimps (DD030093) by cutting along its length rather than cutting through the stainless steel cable (DD030092).

2. Replace cable (DD030092), 'D' ring (DD030094) and cable sleeves (DD030102) as necessary, and refit.

3. Cable crimps (DD030093) can be applied by using a crimping tool or by improvising a simple tool. Crimp at least 3 times to ensure positive fastening.

6.12 Neck Seal

The neck seal (DD030091) is made of the same closed-cell foam neoprene as is used for wetsuits, and is repaired in the same manner. To inspect the neck seal (DD030091), stretch the neoprene between the hands and look for punctures, or breakdown in the seams. Clean any surfaces to be glued with a neoprene solvent. Coat each surface with neoprene glue and keep apart until the surfaces are dry to touch. Apply a second coat of glue and again keep the two surfaces apart until the glue is dry to touch. Try to avoid getting glue onto any part of the neck seal which will come into contact with the diver's skin, as it will irritate and chafe.Then bring the two surfaces firmly and squarely together when an instant bond will be made. Allow the glue to dry for several hours to develop its full strength.

Do not use the neck seal (DD030091) until the glue is fully set. The glue gives off hazardous fumes until curing is completed.

6.13 Replacement Nose Pad, Liner Pad & Velcro Fasteners

Replacement Nose Pad (DD030079), Liner Pad (DD030080) & Velcro Fasteners (DD030025).

Use neoprene glue for all parts, as for permanent wetsuit repairs.

Clean both surfaces with solvent then coat both with neoprene glue. Leave until both are dry to touch. Re-coat both surfaces with glue and leave again until both are dry to touch. Lines up and then firmly hold together, pressing down all the parts to be glued. Do not attempt to reposition the item once initial glue contact is made.

Allow glue to dry fully before using the helmet. A strong glue smell indicates that the glue has not fully dried.

6.14 Harness

Maintenance is limited to light lubrication of the edges of the slider bars where they contact the sides of the buckles and to re-stitching the harness.

The length of the webbing straps can be reduced by cutting the webbing with a hot knife.

6.15 Helmet Shell - Glass Fibre

6.15.1 Helmet Shell

The helmet shell (DD030001) is constructed of multiple layers of hand-laid glass fibre with lead weight distributed at key points. It is extremely strong.

Scratches can be removed by using a car body rubbing compound and then waxing.

Deeper scratches need rubbing with 600 wet-and-dry paper, always used wet. Then smooth over with 800 wet-and-dry paper, used wet. Then use a rubbing compound and finally wax.

Deep indents should be filled with colour-matched polyester resin gel-coat which is then cut back to shape, with wet-and-dry paper, rubbed and waxed.

6.15.2 Helmet Shell - Screw Inserts

Helicoil stainless steel screw inserts (DD030002) are embedded in the glass fibre to provide a secure connection for the port frames (DD030074 or 77).

The 8-32 UNC screw inserts (DD030002) are not reusable if they are damaged or pulled out of the shell.

To remove a damaged or loose insert (DD030002), use a small screwdriver or scribe to lift the end of the thread then extract with pliers. Thoroughly clean the hole of all loose material.

For field repair, fill the entire hole with Araldite or equivalent epoxy resin, ensuring that all air is removed. When dried, drill a pilot hole in the epoxy and then use a self tapping screw in this hole.

For long term repair, workshop facilities are required. Remove the insert (DD030002), as above.

Remove any loose G.R.P. fragments with a vacuum line. The hole must now to be tapped with a Helicoil insertion tap, 5/16" deep. Make sure that the new tapped holes are square. Screw in the insert (DD030002) until the top is flush to outside of the G.R.P.

6.16 Socket Set Screws

Regular maintenance, the application of candle or beeswax in the screw thread, and the use of the correct hexagonal keys will ensure that socket setscrews are serviceable.Use a 5/64" A/F hexagonal key for all socket setscrews (DD030067 & 46) except those (DD030086) which secure the latch body (DD030082) to the upper neck ring. They require use of a 5/32" A/F hexagonal key.

If there is any difficulty, proceed as follows:

Apply penetrating spray such as WD40, taking care not to over spray the face ports. If this fails, soak the assembly with the socket setscrews in the mild acetic acid (vinegar). Leave for 15-30 minutes and then attempt to release with correct size hexagonal key.If this fails to free the thread, the socket setscrews must be drilled out. To remove the smaller socket setscrews (DD030067 or 46) use a drill 0.075" (2 mm) or smaller to drill out the centre of the screw. Do not use a larger drill as it is likely to wander and damage surrounding material. Then take 0.125" (3 mm) drill and drill down the centre. Finally, clean the threads with 8-32 UNC tap taking care not to dislodge the Helicoil or carefully pick out the remains of threads with a hooked picking tool.

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Chapter 7 - Component Material List

Part No	Description	Material
DD030001	Shell	GRP & Lead
DD030002	Insert, Helicoil, 8-32 (128-2)	Stainless Steel
DD030003	Upper Neckring	Bronze, Nickel Plated
DD030004	Lower Neckring Only	Bronze, Nickel Plated
DD030013	Feedthrough, Communications	Brass, Nickel Plated
DD030014	Nut, Gland	Brass, Nickel Plated
DD030015	Locknut, Feedthrough, Communications	Brass, Nickel Plated
DD030016	Washer, Plain	Stainless Steel
DD030017	Gasket	Rubber, Nitrile
DD030018	Blank, Bailout Inlet Adaptor	Brass, Nickel Plated
DD030019	Binding Post	Brass/Plastic
DD030020	Eyelet, 2BA	Copper & Plastic
DD030021	Cable, 2 Core Communications	Copper & PVC
DD030023	Speaker Moulding	PVC
DD030024	Transceiver, Mic/Earphone	Brass & Plastic
DD030025	Velcro, Set, 4 Pieces	Velcro
DD030026	Pull Tie	Plastic
DD030026B	Base, Pull Tie	Plastic
DD030027	Connector, Male, 4 Pin	Neoprene & Brass
DD030028	O-Ring, Comms, Connector (119)	VITON
DD030043	Seal, Valve Spindle	P.T.F.E
DD030044	Spindle With Seat Assembly	Stainless Steel & Kel-F
DD030046	Screw, Socket Set (no 8-32x1/4) (103-3)	Stainless Steel
DD030048	Locknut, Inlet Valve	Brass, Chrome Plated
DD030050	Plug, L.P. 1/4 NPT Plated	Brass, Nickel Plated
DD030051	Adaptor, Inlet Valve, Bailout, 1/4” NPT - 9/16” NPT	Brass, Nickel Plated
DD030053	O-Ring, Blank	Rubber, Nitrile
DD030054	Knob, Exhaust Valve, AH3/4/5	Brass, Nickel Plated
DD030055	Cover Nut (129-2A)	Brass, Nickel Plated
DD030056	Spring, Secondary, (129-3)	Stainless Steel
DD030057	Retainer, Spring, Exhaust Valve	Brass
DD030058	Circlip, Internal (129-1A-1)	Stainless Steel
DD030059	Circlip, External (129 1A-2)	Stainless Steel

Part No	Description	Material
DD030060	Spring, Primary, (129-6)	Stainless Steel
DD030061	Exhaust Valve, Poppet Spindle (129-7)	Brass, Nickel Plated
DD030062	O-Ring, Poppet Valve (129-8)	Rubber, Nitrile
DD030063	Body, Exhaust Valve Assembly, (129-9)	Brass, Nickel Plated
DD030064	Gasket, (129-16)	Rubber, Nitrile
DD030065	Locknut, Exhaust Valve	Brass, Chrome Plated
DD030066	Head Button, (129/14)	Brass, Nickel Plated
DD030067	Screw, Grub 8-32x1/8 (129-15B)	Stainless Steel
DD030068	Grating, Exhaust Valve, (129-12)	Brass, Nickel Plated
DD030069	Secondary Body, Exhaust Valve, (129-11)	Brass, Nickel Plated
DD030070	Exhaust Valve, (129-10)	Rubber, Silicone
DD030071	Screw, 4-40x3/16 Pan Head, (129-15)	Stainless Steel
DD030072	Gasket, Strip	P.T.F.E
DD030073	Port, Top, (125)	Polycarbonate
DD030074	Retaining Plate, Viewport, Top (124)	Stainless Steel
DD030075	Gasket, P.T.F.E Strip	P.T.F.E
DD030076	Port, Face, Front, (127)	Polycarbonate
DD030077	Retaining Plate, Viewport, Front (126)	Stainless Steel
DD030078	Screw, Slotted Pan, HD, 8-32x1/2	Stainless Steel
DD030079	Nose Pad, (120)	Neoprene
DD030080	Liner Pad, Head (121)	Neoprene
DD030081	O-Ring, Lower Neck Ring	Rubber, Nitrile
DD030082	Latch Body	Bronze, Nickel Plated
DD030083	Latch, Pin	Stainless Steel
DD030084	Spring, Latch	Stainless Steel
DD030085	Lever, Latch	Bronze, Nickel Plated
DD030086	Screw, 1/4 Unc x 3/4 LG Csk. HD.Skt	Stainless Steel
DD030087	Pin, Stop, Lower	Stainless Steel
DD030088	Clamp Band, Assembly, Standard (405)	Stainless Steel & Plastic
DD030089	Clamp, Block	Stainless Steel
DD030090	Clamp Nut, M5x0.8mm	Brass
DD030091	Neck Seal (406)	Neoprene
DD030092	Cable, Slide	Stainless Steel
DD030093	Crimp, Cable	Stainless Steel
DD030094	D-Ring, Cable Slide	Stainless Steel

Part No	Description	Material
DD030096	D-ring, Harness Buckle	Stainless Steel
DD030097	D-Ring, 55mm x 8mm	Stainless Steel
DD030098	D-Ring, Adjustable	Stainless Steel
DD030099	Snap, Adjustable	Stainless Steel
DD030102	Sleeve, Plastic Slide	Tube, Plastic
DD030104	Bush, Inlet Valve Spindle	Brass
DD030105	Body, Bonnet, Inlet Valve	Brass, Nickel Plated
DD030106	Harness Assembly, Lower Complete	See Dwg. P2083-DG-164
DD030109	Retainer, Exhaust Valve, AH3, Overpressure	Brass
DD030117	Exhaust Valve Assy	See Dwg. P2083-DG-300
DD030138	Circlip	Stainless Steel
DD030139	Circlip	Stainless Steel
DD030140	Diffuser	Brass
DD030141	Diffuser	Brass
DD030142	Deflector, Air Inlet	PVC
DD030153	Manifold, Body Assembly Only, Plated	Brass
DD030154	Inlet Valve, Assembly, AH5	See Dwg. P2083-DG-002
DD030164	Bonnet, Inlet Valve	Brass, Nickel Plated
DD030165	Bonnet, Bailout Valve	Brass, Nickel Plated
DD030166	Nut, Gland, Inlet Valve	Brass, Nickel Plated
DD030167	Valve, Bonnet Assembly	See Dwg. P2083-DG-004
DD030169	Spring, Non-Return Valve	Stainless Steel
DD030170	Adaptor, Non-Return Valve, Inlet Manifold	Brass, Nickel Plated
DD030171	Poppet, Non-Return Valve, Inlet Manifold	Bronze
DD030172	Cage, Non-Return Valve, Inlet Manifold	Bronze
DD030176	Spindle with Seat, Inlet Valve, Manifold	Stainless Steel & Kel-F
DD030178	Rod, Threaded, 2BA	Stainless Steel
DD030320	AH3, Lower Ring Assembly, C/W Harness, Neckseal & Clamp	See Dwg. P2083-DG-157
DD030322	Lower Ring Assembly	See Components
DD030324	Latch Assembly, Complete	See Dwg. P2083-DG-175
DD030326	AH3, Comms System Assembly	See Dwg. P2083-DG-182
DD030327	Eyelet, Uninsulated	Copper
DD030552	Nut, 8-32, Hex	Brass
DD061113	D-Ring, 50mm	Stainless Steel
DD061301	Webbing, 48mm, Metre	Nylon

Part No	Description	Material
DD401129	Seal, Bonded, 3/8” BSP	Stainless & Rubber
DE079	Adaptor, 1/4” NPT/O2	Brass
DST032	Label, Divex, Black Woven,3”x2”	Cloth
DST233	Label, Address	Cloth
E11909	Heatshrink, Black	Polyolefin
RN4016-7	O-Ring	Rubber, Nitrile
RN804-7	O-Ring	Rubber, Nitrile
T1061	Label, Self Adhesive, Divex, Model/Serial No.	Aluminium, Polyester
T14759	Badge, Enamel, Divex Logo	Vinyl
T14761	Badge, Enamel, AH5 Logo	Vinyl

Chapter 8 - AH5 Helmet Specification

Type Designation:	AH5 - helmet with binding posts and neoprene waterproof connector. Standard of Nuclear Configuration.
Helmet:	Glass Reinforced Plastic (GRP)
Ports:	Polycarbonate (Lexan).
Neck Rings:	Aluminium Bronze.
Inlet Pressure Requirements:	At the helmet, minimum 50 psi over ambient. As rule of thumb, plus 60 psi (4.2 bar) over bottom pressure, for depths up to 120 feet (36.6 metres). For over 120 feet (36.6 metres) add 100 psi (6.9 bar) over ambient.
Inlet Air Flow Requirements:	3 to 6 ambient cubic feet per minute (85 - 170 ambient litres per minute), dependent on breathing level.
Connection:	Main air inlet 9/16" UNF male. 60 degree cone seal. Emergency air inlet adapter - 9/16" UNF male, 'O' ring seal to 1/4" NPT male. Inlet valve body to receive emergency air adapter 1/4" NPT female.
Hexagonal Key Sizes:	Socket setscrews for inlet valve, exhaust valve and location latch pin - 5/64" A/F. For location of latch body to upper neck ring - 5/32" A/F.
Adjustment Range of Exhaust Valve Over Pressure Setting:	Approximately 0.25 – 1.5 psig over ambient.
Mass:	AH5 with lower neck ring assembly - 13.5 kg (30 lb).

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Chapter 9 - AH5 Helmet Drawings

Part No	Description	Drawing No
DD030342	AH5 Helmet & Harness Assembly	P2083-DG-001
DD030154	Inlet Valve Assembly	P2083-DG-002
DD030163	Main Air Valve Bonnet Assembly	P2083-DG-003
DD030167	Bailout Valve Bonnet Assembly	P2083-DG-004
DD030117	Exhaust Valve Assembly	P2083-DG-005
DD030324	Latch Assembly	P2083-DG-006

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