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## THE DRÄGER PANORAMA FULL FACE MASK





# SPECIFICATION

Author: Roger Parker	Date: 18/08/2004	
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Description: TX100 2 <sup>ND</sup> Stage & Dräger Panorama Full Face Mask CE Type Examination	Project Number: PRJ-0232	

## 1 Description:

### **Dräger Panorama Full Face Mask**

The Dräger Panorama is a full face mask for diving applications. The mask itself will be available in two different variants, these are a sports diver model and a special operations variant which will be sold to the commercial and military markets.

The mask has an oral nasal piece which breathing gas flow is channelled through one-way valves, so that no CO<sub>2</sub> enriched breathing cycles can occur inside the full face mask. To ease breathing effort and aid the expulsion of water from inside the mask a sprung loaded exhaust valve is fitted at the base of the mask. Two nose clips are fitted in rotary mounts in the visor, enabling the diver to carry out pressure compensating by pinching the side of the nose.

The Mask is fitted with three standard Dräger `P` type connectors, two are located on the side and one is located in the middle of the mask which is for the main breathing demand valve. The two connectors located on the side can be used to connect a microphone unit to the full face mask. All un-used connectors can be sealed with blanks. The diver can breath ambient air by not inserting the second stage into the mask, thereby conserving the breathing air supply in the cylinder.

The special operations variant has a plug-in connector which is located on the side of the visor for the fitment of a mechanical low pressure warning system.

### **TX100/50 Full Face Mask Demand Valve;**

The TX100/50 second stages are designed specifically for the use as a main demand valve, these are pneumatically balanced and lever operated poppet-valve regulators. These can be used with any first stage pressure reducers with an interstage pressure no greater than 17bar.

The TX100/50 demand valves have a diver adjustable venturi-assistance which operates by mean of a lever operated air flow spoiler mounted co-axially about the resistance control screw. The venturi assistance should always be set in the plus (+) position when submerging.

The TX100/50 are suitable for use in cold water situations, defined in EN250 as 10<sup>0</sup>C or below when used with a first stage regulator that is also suitable.



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The Mouthpiece has a designed and developed Dräger `P` type connection fitted to allow the second stage to be fitted to the Dräger Panorama Full Face Mask. The mouthpiece adapter has been developed so that it can produce the greatest breathing performance when being used in any diving position.

## **2 Nitrox Use:**

The Dräger Panorama Full Face mask and TX100/50 demand valves are not suitable for use with Oxygen enriched gases (ie Nitrox), with an oxygen content greater than 40%.



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## **DRÄGER FULL FACE MASK; THE BENEFITS**

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- MAIN SEALING SKIRT IS MADE OF A SOFT EPDM ELASTOMER WHICH HAS A DOUBLE SEALING FRAME WHICH SEALS TO THE DIVER FOR MAXIMUM COMFORT AND TO PREVENT WATER INGRESS.
- KEEPS CONTACT TO A MINIMUM IN CONTAMINATED ENVIRONMENTS.
- THE MASK IS FITTED WITH THREE DRÄGER “P” CONNECTORS, TWO ARE LOCATED ON EITHER SIDE OF THE SOFT BODY AND ONE IN THE FRONT FOR THE MAIN DEMAND VALVE.
- COMMUNICATIONS CAN BE FITTED EASILY USING EITHER ONE OF THE TWO SIDE “P” CONNECTORS.
- LOW AIR WARNING DEVICE CAN BE FITTED (SPECIAL OPS ONLY) IN THE VISOR.
- AN ORAL NASAL PIECE WHICH IS DESIGNED TO ALLOW GAS FLOW TO BE CHANNELLED THROUGH ONE-WAY VALVES SO THAT NO CO<sub>2</sub>-ENRICHED BREATHING CYCLES CAN OCCUR INSIDE THE FULL FACE MASK.
- UNIQUE AND COMFORTABLE WAY OF PRESSURE COMPENSATING USING THE INTEGRAL SWIVELLING NOSE CLIPS WHICH ALLOWS THE DIVER TO PINCH THEIR NOSE AND PRESSURE COMPENSATE QUICKLY AND EASILY.
- EASY REMOVAL OF THE DEMAND VALVE ALLOWS THE DIVER TO BREATHE AMBIENT AIR WHILST WAITING TO ENTER THE WATER THUS CONSERVING AIR.
- THE MASK IS EASILY REMOVED UTILISING THE QUICK RELEASE BUCKLE SYSTEM.
- THE MASK HAS AN INTEGRATED SPRUNG LOADED EXHAUST VALVE TO AID THE EXPULSION OF ANY WATER WHICH MAY HAVE ENTERED THE MASK.
- THE MASK LENS HAS A SPECIAL ANTI FOGGING COATING LENS



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# DRÄGER PANORAMA NOVA DIVE FULL FACE MASK; PRODUCT INFORMATION

## THE DIFFERENT MODELS;

THE SPORTS MASK PRT NO T53700



NOTE; ON THE SPORTS MASK THERE IS NO LOCATION HOLE, THIS IS ONLY DIFFERENCE BETWEEN THE SPORTS AND SPECIAL OPS MASKS.

THE SPECIAL OPERATIONS MASK PRT NO T53510

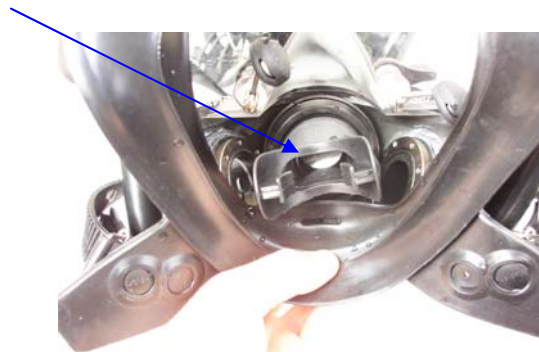


LOCATION PORT FOR THE WOODPECKER LOW AIR WARNING DEVICE. *Note; this is supplied with a plug for when the Wood pecker low air warning device is not needed.*

THE RE-BREATHER MASK PRT NO T52730



THE RE-BREATHER VERSION OF THE FULL FACE MASK IS EXACTLY THE SAME EXTERNALLY AS THE SPORTS VERSION OF THE FULL FACE MASK. THE MAIN DIFFERENCES BEING INTERNALLY; ARE THE MASK DOES NOT HAVE AN ORAL NASAL MASK AND THERE IS A BITE MOUTHPIECE LOCATED INSIDE THE MASK.





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**The differences between the re-breather full face mask and sports/special ops full face mask.**



Oral Nasal mask only fitted to the sports & special ops mask.



Bite mouthpiece in the re-breather mask only, note there is no oral nasal mask used in the re-breather full face mask.

**Important;** The special operations mask and sports mask cannot be used with the Dräger Dolphin re-breather as the mask would be blown off the face due to the absence of a bite mouthpiece, which would complete the breathing loop. For anyone to use a Dräger Panorama full face mask in conjunction with a re-breather they have to purchase the re-breather version of the mask, no other version of the mask can be used.



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**COMMUNICATION:**

A communication system has been specially developed for the Dräger Panorama full face mask by OTS (**Ocean Technology Systems**). We will not be stocking or selling this communication system but the customer can purchase this system from OTS/Dräger.



The OTS communications device, this system is a push to talk 2 way communication system which fits directly to the Panorama full face mask. The earphones are held in place by the straps of the mask itself and the microphone is located in either one of the side connectors on the mask. This communication device allows diver to diver and/or surface to diver communication.

**IMPORTANT;**

The communication system can be used with the re-breather version of the mask, but the clarity and content of communications are some what limited due the diver using a bite mouthpiece.

The picture on the right hand side shows the special operations mask with the OTS communication system fitted.

Earphones; these are held in place by the straps of the mask.

Push to talk button, located in the side connector.





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**Low air warning device;**

*“Woodpecker”*

This device is also known as the “WOODPECKER” low air warning device.

The mechanical low pressure warning is an independent module approved according to EN250. It is attached on one end to a high pressure port of the pressure reducer and on the other to the visor of the mask.

The warning is being activated once the remaining pressure is reached. A piston starts pulsating and the diver is warned by acoustic, visual and tactile signals (vibrations) transmitted by the moving piston to the mask.



The picture on the right shows the woodpecker located on the special operations mask.



**IMPORTANT!!**

The low air warning device can only be used with the special ops version of the full face mask.

THE RE-BREATHER MASK PRT NO T52730



The picture on the left shows the re-breather version of the mask fitted with the Dräger "T" piece for use with the Dräger Dolphin re-breather. Note no other method can be used to connect the re-breather hoses to the full face mask.

**IMPORTANT;**

The communication system can be used with the re-breather version of the mask, but the clarity and content of communications are somewhat limited due the diver using a bite mouthpiece.

Dräger "T" piece

**DSM (DUAL SYSTEMS MASK)**



Dräger Shark bail out regulator

Free flow control device (FCD)



Apeks TX100 bail out regulator

Dräger "T" piece

**DSM (DUAL SYSTEMS MASK)**

**NOTE;** it is possible to fit and use either a shark or an Apeks TX100 second stage to the Re-breather version of the full face mask. This system is known as the DUAL SYSTEM or DSM (dual systems mask) this allows the diver to have a bail out system if the re-breather the diver is using fails during the dive.

Important!; it is essential that the Bail out regulator is used in conjunction with an air supply which can be isolated so that the regulator can only be used when the air supply is on. Alternatively if an isolatable air supply cannot be obtained/used then an APEKS FCD can be used.

**IMPORTANT!!**



Important; it is not possible to have and use two regulators mounted in the full face mask, as the main breathing regulator will free flow through the exhaust valve of the Octopus regulator.

Design is currently working on the feasibility of changing the Octopus regulator so that it can be used in conjunction with the primary regulator.

It is possible however to use the primary demand valve in the either one of the side connections but it has not been tested or approved for use in this configuration, it is believed due to the large volume inside the mask that the C02 levels will higher than if used in the front of the mask.



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**Locking Ring; Prototype**



The picture on the left shows the prototype locking ring, this device has been developed to enable the diver to "Lock" the 2<sup>nd</sup> stage demand valve in any orientation & also it is believed that some divers prefer to have the 2<sup>nd</sup> stage locked into position rather than have it free to rotate.

We are still awaiting feedback and discussions on whether we will be going ahead with this product.

**The Dräger TX50;**

This is an Apeks TX100 second stage which will be sold only to Dräger. The TX100 will be sold with a DST first stage and the whole product will be known as the Dräger TX50.

We are still awaiting conformation on the details on the decal which will be used on the front cover shown below.





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**DRÄGER PANORAMA NOVA DIVE FULL FACE MASK**

THE SUPPLIED SECOND STAGE HAS BEEN SPECIALLY ADAPTED TO FIT AND OPERATE WITH THE DRÄGER PANORAMA FULL FACE MASK, THE SECOND STAGE FITS TO THE FULL FACE MASK IN THE SAME WAY AS THE DRÄGER SHARK AS ILLUSTRATED IN THE SUPPLIED DRÄGER FULL FACE MASK MANUAL.

FOR THE CORRECT AND SAFE USE OF THE DEMAND VALVE PLEASE REFER TO THE SUPPLIED APEKS REGULATOR USER MANUAL.

THE MASK AND REGULATOR HAVE BOTH BEEN CE APPROVED & CERTIFIED FOR THE REQUIREMENTS OF EN250 FOR DEMAND REGULATORS AND FULL FACE MASKS.

CE TYPE APPROVAL BY:

GERMANISCHER LLOYD  
VORSETZEN 32  
D-20459  
HAMBURG  
GERMANY  
NOTIFIED BODY No. 0098



**FITMENT:**



FIG 1.0

TO CONNECT THE SECOND STAGE TO THE FULL FACE MASK (SEE FIG 1.0), PUSH THE SECOND STAGE INTO THE FRONT CONNECTION UNIT ON THE MASK UNTIL YOU HEAR THE SPRING AUDIBLY CLICK INTO PLACE.

CHECK THAT IT IS CORRECTLY SEATED IN THE CONNECTOR BY PULLING THE SECOND STAGE OUTWARDS IN THE OPPOSITE DIRECTION TO THE PLUGGING ACTION. YOU MAY WISH TO ONLY PLUG IN THE 2ND STAGE WHEN YOU HAVE REACHED THE WATER OR THE EDGE OF THE BOAT TO CONSERVE YOUR AIR SUPPLY.

**DIVING THE DRÄGER FULL FACE MASK WITH THE TX100 2ND STAGE:**

**NOTE:**

ALTHOUGH SHOWN IN THE DRÄGER MANUAL, IT IS NOT POSSIBLE TO HAVE MORE THAN ONE SECOND STAGE FITTED TO THE MASK AT THE SAME TIME. APEKS 2ND STAGES ARE SET SLIGHTLY SENSITIVE TO ENSURE MAXIMUM BREATHING PERFORMANCE, AND THE ADDITION OF A SECONDARY DEMAND VALVE WOULD CAUSE A SLIGHT FREEFLOW.

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**DRÄGER PANORAMA NOVA DIVE FULL FACE MASK**

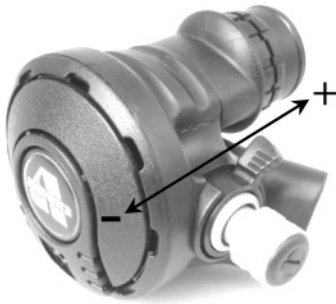


FIG 1.1

APEKS TX100  
2ND STAGE WITH  
I.V.S

BEFORE SUBMERGING AND COMMENCING THE DIVE, ENSURE THAT THE 2ND STAGE DEMAND VALVE I.V.S (INTERGRATED VENTURI SWITCH) IS PLACED IN THE (+) PLUS POSITION. (SEE FIG 1.1)



FIG 1.2

THE APEKS 2ND STAGE COMES WITH A REMOVABLE PLASTIC CAP WHICH PROTECTS THE MOUTHPIECE ADAPTER 'O' RING FROM DAMAGE AND THE INGRESS OF DIRT WHEN THE SECOND STAGE IS NOT ATTACHED TO THE MASK (SEE FIG 1.2). WHEN THE 2ND STAGE IS ATTACHED TO THE MASK, THE PROTECTIVE CAP CAN BE LOCATED ON EITHER OF THE TWO REMAINING BLANKING PLUGS.

PLEASE NOTE THAT IS IMPORTANT THAT THE O RING IS KEPT CLEAN AND WELL LUBRICATED USING CHRISTO-LUBE MCG 111.

**COMMUNICATIONS:**



◀ OTS (OCEAN TECHNOLOGY SYSTEMS) COMMUNICATIONS DEVICE, THIS IS A PUSH TO TALK 2 WAY COMMUNICATION SYSTEM WHICH FITS DIRECTLY TO THE PANORAMA FULL FACE MASK. THE EARPHONES ARE HELD IN PLACE BY THE STRAPS OF THE MASK ITSELF AND THE MICROPHONE IS LOCATED IN EITHER ONE OF THE SIDE CONNECTORS ON THE MASK. THE COMMUNICATION DEVICE ALLOWS DIVER TO DIVER AND/OR SURFACE TO DIVER COMMUNICATION.

FOR MORE INFORMATION ON THIS COMMUNICATION SYSTEM PLEASE CONTACT;

OCEAN TECHNOLOGY SYSTEMS  
3133 WEST HARVARD STREET, SANTA ANA, CA. 92704  
TELEPHONE: (714) 754-7848 FAX (714) 966-1639  
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**Dive Magazine Review:**

**June 2005**



**TEST ZONE**

# FACING OPTIONS

**APEKS PANORAMA MASK £560, MASK ADAPTED  
APEKS TX100 SECOND STAGE £165.05**

Reviews by Louise Murray

DO THE benefits of full-face masks outweigh the disadvantage of being mistaken for one of Darth Vader's offspring? For starters, you can forget about jaw ache on long dives, as there is no mouthpiece to clamp in your mouth. The diver's face stays warm and dry, and the masks are perfectly suited to the use of communication systems. As an added safety measure, even an unconscious diver will continue to be supplied with air, as there is no mouthpiece to lose.

The big drawback with these kind of masks to date is that they have always had the air supply integrated into the mask, so that if your regulator failed, say by free-flowing in cold water, then you had to remove the whole mask, put on another one, and then use an alternative air source. That's a lot of task-loading in what might be extreme conditions. The reason we have chosen to review the Kirby Morgan SuperMask (see below) and the

Apeks Panorama together is that both have approached the same problem – allowing a change of regulator without removal of the mask – with quite different designs.

The Apeks is the epitome of a tekkie's dream. The black double-seal skirt fits well to most faces, though sadly not my own small, narrow face, which defied attempts to seal the mask soundly after three dives. We arranged for instructor Graham Dickson to make the test dives and report back.

'The mask has three ports,' says Graham. 'A central one for the Apeks TX100 regulator and one on either side of the face for installation of optional comms. The quick-release button above the regulator is easy to use so that you can breathe air at the surface before popping in the regulator with a simple push and click, just before descending. I liked the windscreen wipers on the outside of the mask, which operate swivelling nose clips, making equalisation



simple even when wearing dry gloves.

'The Panorama has excellent field of vision and feels open and bright, altogether an easy breathe and very comfortable. The only drawback is that switching gas mixes requires a second regulator also designed to snap into the Panorama, but the one-push green button is easy to release, swap and secure. The mask quick-release handles are the best I have ever used on a full-face mask.'

### Verdict

Comfortable breathe and easy to use

**Value:** 6/10

**Performance:** 8/10

**Contact:** Apeks 01254 692200

[www.apeks.co.uk](http://www.apeks.co.uk)