

Speciality Welds


Experts to the Welding Industry

Piranha safety Isolation Switch

Instruction/User Guide



General Information:

Thank you for purchasing a Piranha DC current safety isolation system. This unit has been designed and built to exacting standards and if treated with due care and attention, will perform perfectly for many years. The units may be used for welding and/or cutting operations, using direct current (DC) only, inline with the data plate information provided. We manufacture three models, as shown below and all are fitted with the same 400 amp DC switch. The utility case model is manufactured from a HPX high performance resin and is rated to IP67* and the two steel enclosure models are rated to IP66*

- Utility case (portable) model
- Senior (Large) steel model
- Junior (small) steel model



The utility case and large wall mounted models are fitted with amp and volt meters to provide real time welding parameter data. The junior model is fitted with an indication lamp, which will illuminate when the switch is made live (HOT) and extinguish when closed, (COLD).

Operating Instructions:

Ensure the unit is situated in a location so the supervisor can operate the switch easily. It is important that the welding cables coming from the welding machine are connected to the Piranha so that the '+' and '-' terminals match. If you are using a machine that has a polarity switch, still make sure the welding cables match like for like and set the switch to negative.

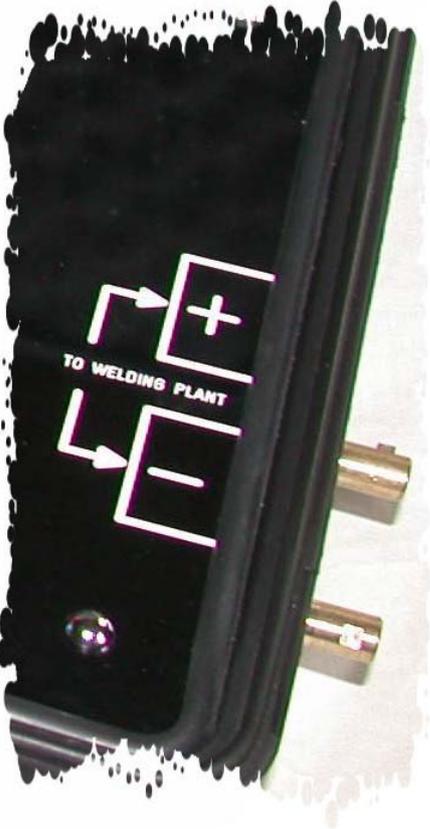
We suggest you make any polarity changes as required, at the Piranha unit not the machine (see note below).

NOTE 1:

The panel, (top left side) indicates by use of the symbols 'A' and 'B' which polarity

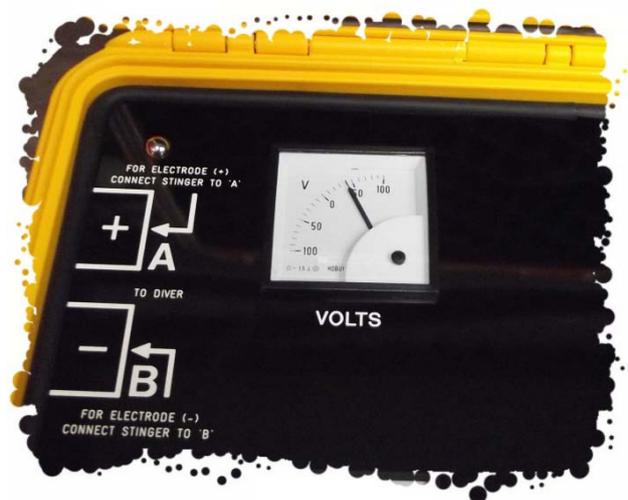
may be selected. The desired polarity will depend on whether the welding (stinger) cable or the return (earth) cable is connected to either the A or B terminals.

The terminal connections fitted to each Piranha unit are standard Dinse (35-50mm²) plugs/socket (see duty cycle table for ratings). Ensure you only use approved standard Dinse cable connections.



Ensure you connect cables from the welding machine to the correct side on the Piranha unit. These should be connected to the panel plug side, as marked on the panel - TO WELDING PLANT. Ensure you connect like for like, matching the polarity symbols to the welding machine.

Once the cables from the welding plant are connected, turn on the machine and check to see that the volt meter registers (no need to connect the welding cables to the diver yet). The volt meter is a zero centred meter and so the needle should rise in an upwards direction. If the meter falls (drops), then the cables are not matched like for like! (Check connections and/or polarity switch and re-test).





If you are using the **Junior** model (no meters fitted) then still ensure all cables match like for like, as detailed above. To test whether the indicator light operates correctly, pull the red on/off knob to make a live (HOT) connection; the indicator lamp will now illuminate. By pushing the red on/off knob down (making it cold) the indicator light will extinguish. This procedure now ensures the correct set-up and you are ready to connect the welding cables to the diver.

Each Piranha is fitted with a large, red bulbous on/off knob. To operate, simply pull in a vertical direction to make it HOT and push down to make it COLD.



NOTE 2: When using the on/off knob, do not use excessive force, particularly when making COLD, as the switch will operate with the minimum of resistance.



Now you are ready to connect the welding cables to the diver side on the Piranha unit. You will note that on this side of the panel as well as the usual polarity symbols (+/-), you will see instructions to allow for changing polarity. All polarity changes **MUST** only be made from the diver side of the panel. To deliver positive (+Ve) polarity to the stinger (electrode holder) connect the stinger cable to the terminal marked [A]. To connect negative (-Ve) polarity to the stinger cable, connect the stinger to the terminal marked [B].

DO NOT ALTER THE CABLES FROM THE WELDING MACHINE SIDE OF THE PANEL, OR CHANGE THE CABLES ON THE WELDING MACHINE.

Additional Technical Data:

The Piranha isolation safety switch is fitted with an approved 400 amp, dual pole switch; the duty cycle of which is as shown on the data label, affixed to the panel (see copy below). As the switch is fitted in an enclosed space, the duty cycle is restricted to protect the unit. It is important that these duty cycles are adhered too, otherwise serious overheating may occur. If you notice the unit getting warmer and warmer during operational use, always allow an extended cooling period to take place.

Speciality Welds				
Piranha (II)				
CURRENT RATING AMPS (DC)	DUTY CYCLE			
	100%	65%	35%	
220	365	400		
ASSEMBLY CODE				
YEAR OF MANUFACTURE				
Tel: +44 (0) 1274 879867 Fax: +44 (0) 1274 855975 Web: www.specialwelds.com Email: sales@specialwelds.com				

It is important to ensure you use the correct size of welding cable for the selected current. However, please note voltage drop may also need to be taken into account, as the size and length of welding cable used may also need to be considered. Typical current ratings data for use with copper welding cables manufactured in accordance with BSEN 50525-2-81:2011 (replaces BS638-4: 1996) are shown below.

Nominal Area mm ²	Current ratings measured in Ampere for copper conductors for a single cycle maximum duty cycle per-cent.			
	100%	85%	60%	35%
16	135	145	175	230
25	180	195	230	300
35	225	245	290	375
50	285	305	365	480
70	355	385	460	600
95	430	470	560	730
120	500	540	650	850
150	580	630	750	980

Piranha units are not fully waterproof, but are rated to IP66/7 * (see details below).

* IP (or "Ingress Protection") ratings are defined in BSEN 60529:1992. They are used to define levels of sealing effectiveness of electrical enclosures against intrusion of foreign bodies (tools, dirt) and moisture, etc. The numbers have a specific meaning. The first digit indicates the degree of protection (for people) from moving parts, as

well as the protection of enclosed equipment from foreign bodies. The second digit defines the protection level that the enclosure enjoys from various forms of moisture (drips, sprays, submersion etc).

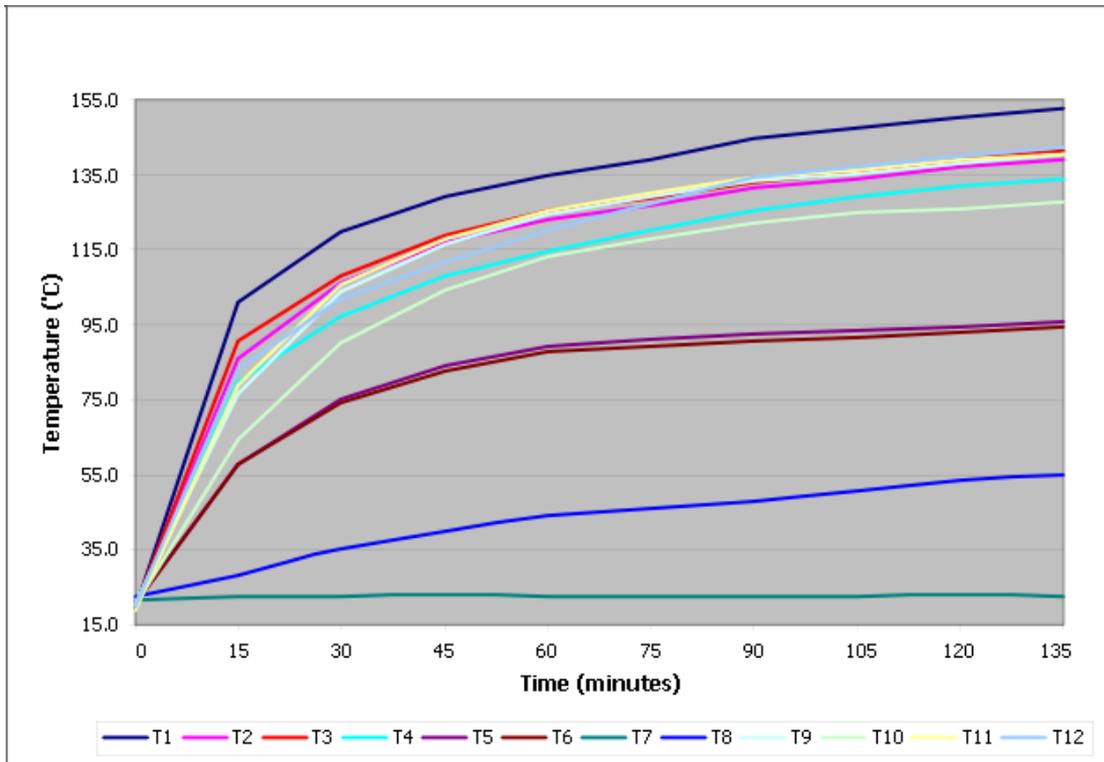
IP Rated Enclosure chart	
First Digit (intrusion protection)	
0	No special protection
1	Protection from a large part of the body such as a hand (but no protection from deliberate access); from solid objects greater than 50mm in diameter.
2	Protection against fingers or other object not greater than 80mm in length and 12mm in diameter.
3	Protection from entry by tools, wires etc, with a diameter of 2.5 mm or more.
4	Protection against solid bodies larger than 1mm (eg fine tools/small etc).
5	Protected against dust that may harm equipment.
6	Totally dust tight.
Second Digit (moisture protection)	
0	No protection.
1	Protection against condensation.
2	Protection against water droplets deflected up to 15° from vertical
3	Protected against spray up to 60° from vertical.
4	Protected against water spray from all directions.
5	Protection against low pressure water jets (all directions)
6	Protection against string water jets and waves.
7	Protected against temporary immersion.
8	Protected against prolonged effects of immersion under pressure.

Our range of Piranha switches only use the highest quality, UK manufactured components and we offer a 6 month warranty against any defective parts. The Piranha units have undergone independent testing by Albright International to validate thermal profiling performance (duty cycle) ratings and the switch is approved by UL and also has US and Canadian approvals. Online certification details may be obtained against file # E181430 on the www.ul.com website. This links to the following file numbers; NRNT2.E181430 and NRNT8.E181430.

All Piranha units are CE marked and a declaration of conformity certificate is available on request.

The chart shown opposite provides details of the thermal testing undertaken by Albright. The graph show details of the temperature gradients involved during testing. The unit (utility case model) was subjected to a continuous 135 minutes testing period at 250 amps DC and shows the moving contact stabilised at 152.8

degrees C. The voltage drop across the unit was 397mV and the switch performed satisfactorily during the test.



Key:-

T1	SW BAR+ [MOVING CONTACT]	T8	DIVER + [AMB. TEMP]
T2	SW PLANT+ [+BOLT ED]	UNUSED	DIVER - [NC]
T3	SW BAR- [MOVING CONTACT]	T9	SHUNT SW.
T4	SW PLANT- [-BOLT ED]	T10	SHUNT OUTER
T5	PLANT + [INPUT BOLT]	T11	SW DIVER +
T6	PLANT - [INPUT BOLT]	T12	SW DIVER -
T7	AMBIENT EXTERNAL		

Enclosure are available in three models; large and small steel and a utility case.

Large (senior)

Material: Steel
 Type: Wall Mount
 Body Colour: Grey
 Wall Thickness: 1.2mm
 External Depth: 200mm
 External Height: 400mm
 External Width: 400mm
 IP Rating: IP66

Small (junior)

Steel
 Portable or wall mount
 Grey
 1.2mm
 150mm
 300mm
 250mm
 IP66

Utility case

HPX resin
 Portable
 Black or Yellow
 -
 157mm
 462mm
 297mm
 IP67

Supplementary Information:

Details with regards to the safe use of electricity underwater may be obtained from the code of practice D045, published by IMCA. It is highly recommended that all persons involved with using electricity underwater be familiar with this document.