

IONFIX PRO STATIC GENERATORS

DISTRIBUTOR MANUAL



The IONFIX Pro Generators complete the IONFIX range. They are full power, 30 kV and 60 kV Generators giving customers all the power and control that they want in an easy-to-use and attractive design.

Contents

		Page
1.	The IONFIX Range	2
2.	Why was IONFIX PRO developed?	3
3.	Sales Points - what is new?	4
4.	Features & Benefits	5
5.	Features & Benefits	6
6.	Features & Benefits	7
7.	Competitors	8
8.	The Market for IONFIX Pro	9
9.	Technical Specification	10
10.	Quick Installation Guide	11
11.	Troubleshooting	15
12.	Connector Compatability	16

IONFIX PRO-DM-iss.1

1. THE IONFIX RANGE

The IONFIX Range is a comprehensive family of Static Generators designed to meet the requirements of the most demanding customers in our key markets.

The Range consists of:



IONFIX Compact:

30 kV 20 Watt Generators designed to be very competitive in price and specification, yet meeting the requirements of 50% of the pinning applications in industry.

Available with 24 V DC supply or with 90 – 250 V AC 50/60 Hz input.

The IONFIX Compact is our best seller.



IONFIX Pro:

Designed to compete on specification with the best competitive products available.

It offers 30 kV or 60 kV versions with 150 Watts of power.

Operational features and control are the best on the market: clear, intuitive, logical and easy to use.

IONFIX Pro is designed for larger installations and where full integration is required through Fieldbus connectivity.

IONFIX PRO-DM-iss.1

2. WHY WAS IONFIX PRO DEVELOPED?

We have been underachieving in the Static Generation market. With our main competitors, such as Simco and Eltex, static generation comprises about 30 % of their turnover.

With us static generation is only about 10 % of turnover, even though we targeted similar markets.

- We tried to analyse the reasons for this and came to the conclusion that an important factor was that our product range was not good enough. Our static generators were generally competitive in price and there was a good choice of models, but we were not able to win the major business.
- Our analysis showed that there was a volume market for lower powered generators, but our 7333 models were only suitable for a small part of that market. The IONFIX Compact was developed to meet most of the requirements for the volume market.
- Please see IONFIX Compact Distributor Manual for further details on this model.
- Where more power is required, our range of 60 Watt and 150 Watt models at 30 kV and 50 kV should have been more successful. The 60 Watt versions, especially, were nearly without competition in price and specification.
- We learnt that the 50 kV models should be 60 kV to meet the more difficult applications like wood laminate manufacturing.
- The manufacturing costs for 30 kV and 50 kV generators were similar, but we priced the 30 kV models substantially less than 50 kV, expecting the higher volumes of 30 kV units to justify this. This did not happen. For the replacement models the pricing would have to reflect the costs more accurately, yet still be competitive with the international competition.

IONFIX PRO-DM-iss.1

3. WHAT IS NEW?

Background Information.

The conclusion to our research was that there were two clear market sectors: low power and high power

- 1) Low power and high volume are where price levels are important. The IONFIX Compact addresses this market.
- 2) The higher power market is where more voltage and current is required. In this market price is less important, except in the OEM sector. For this market we had to develop what the customers really wanted.
 - a) **Availability.** Fast delivery is important because many of the sales opportunities are for replacements. Most of our international competitors have a 2 -3 week delivery, which is too long if there is a breakdown.
 - b) **Compatibility.** If the opportunity is for a replacement, then compatibility with existing electrodes is important, though not always possible. We offer compatibility options for Simco and Eltex generators.

Compatibility of connectivity with the customer` machinery is equally important. We made our interface compatible with the market leader in this sector, with the 25 Pin D connector and similar controls.

There is size compatibility with Simco generators.
 - c) **Simplicity.** The controls of our main competitors are complicated and need considerable input of a technician`s time. We made IONFIX controls much easier to use. In their simplest form they are “ready to run”.

This is important for new applications .
 - d) **Price** Price is always a factor, even for the high power range where we could offer many other advantages.

We have achieved a list price which is at least 25% less than our international competitors for products of similar power.

The price difference between the 30 kV and 60 kV was reduced.
 - e) **Range / Power** It was decided that a rationalisation of 60 Watt and 150 Watt models was needed. Our competitors only offered 150 Watt models and we did not seem to be benefitting from a lower cost 60 Watt range.

The IONFIX Pro range as a result only has 150 Watt models.

4. THE FEATURES AND CUSTOMER BENEFITS: DISPLAY AND CONTROL

1) DISPLAY

Every day the customer will benefit from the clear 2-line alphanumeric display. It provides bigger, brighter and clearer indication of the Generator's operating settings than any competitor.



Compare this display against the hard-to-see 4 line Simco displays or the tiny dimensions on the Eltex generators.

2) STATUS INDICATION

The three LED indicators (the white horizontal bars, above in photo) show "at a glance" indication of the generator status – HV ON, Remote Control mode, Current Limit.

All three LEDs blink at once to alert the user to a fault condition (e.g. arc detect).

3) CONTROL PANEL

The control panel has unique simplicity for basic operation:

- dedicated Voltage and Current setpoint adjustment buttons.
- dedicated HV ON/OFF button.

For basic applications everything can be done with these buttons.

On the Simco or Eltex equivalents even basic setup involves fiddling about with menus.

For simple charging applications, the IONFIX PRO is 'plug and play', just power it up, set the voltage and press 'RUN'.

4) CURRENT CONTROL

Current control is an important safety feature which many customers find difficult to understand. IONFIX offers a seamless transition between Constant Current and Constant Voltage modes (see later for the full value of this).

5) REMOTE INTERFACE

The menu structure, which is used to configure the remote interface and access 'advanced' settings is simple and intuitive using a dedicated 4-way control keypad + 'OK' button.

It is much easier to use than the Simco or Eltex or other competitive menu systems.

See later for full details of the remote capabilities.

6) LOCKING SETTINGS

If the customer wants to lock the settings to prevent operator interference, this can be done using the menu keys. A special combination of key presses is then used to unlock the controls.

IONFIX PRO-DM-iss.1

5. THE FEATURES AND CUSTOMER BENEFITS: TECHNOLOGY AND POWER

1) TECHNOLOGY

IONFIX has the most advanced electronic design in our sector. It has digital microprocessor control of the High Voltage electronics to provide highly dynamic response to changing load conditions.

2) INTERNAL PROTECTION

This is fundamental for safety and reliability. The IONFIX PRO has multiple internal protection mechanisms:

Overload/output arc protection.	If the output is overloaded or short-circuited, the generator will disable HV and re-start after 4 seconds.
Over-temperature protection.	If the generator internal temperature exceeds safe limits the HV will be disabled to protect the generator.
Under/over-voltage protection.	If the generator input voltage is out of acceptable limits, the HV will be disabled to protect the generator.
Remote interface.	Fully robust against mis-wiring, ESD, voltage surges.

3) RISE TIMES

The speed of reacting to operational signals is particularly important in automated operations. IONFIX Pro achieves rise times of:

30 kV 150 Watt:	0 – 30 kV in 60 ms
60 kV 150 Watt:	0 – 60 kV in 100 ms

Fall times from max V to 0 with full load is 10 ms. This will increase with a smaller load.

4) FIELDBUS

Fieldbus connectivity is increasingly becoming a requirement.

An extra cost option on IONFIX Pro is hardware support for fieldbus interface, using Anybus. This allows the unit to connect to all popular fieldbus systems.

A socket for the Anybus connector is blanked off at the back panel



5) INPUT POWER

Universal 90 – 250 V 50/60 Hz IEC 320 socket on back face.

IONFIX PRO-DM-iss.1

6. THE FEATURES AND CUSTOMER BENEFITS: PRACTICAL MATTERS

1) ELECTRODE CONNECTIONS

There are connections for 4 electrodes. This compares with 2 connections on the previous models.

Each connector is rated for 60 kV operation: the connectors are the same for 30 kV or 60 kV. These connectors are compatible with Simco 60 kV Bars.

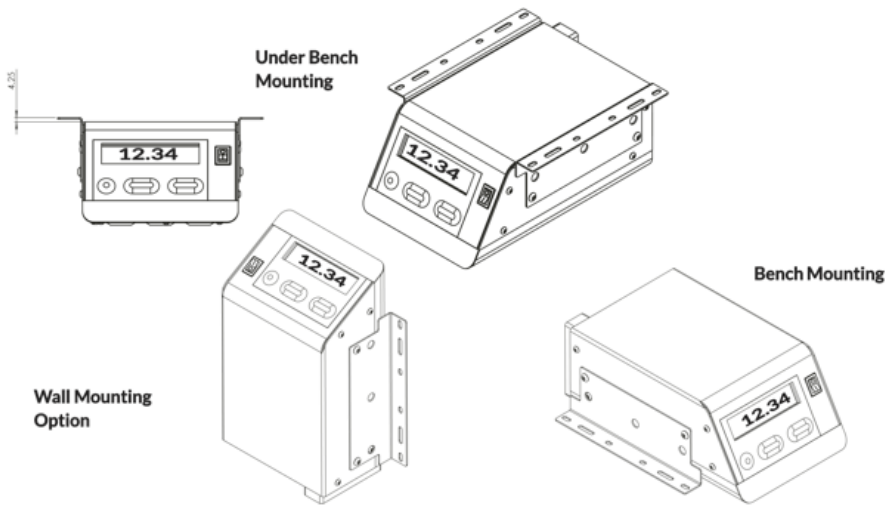
This gives the 30 kV connectors extra resilience in high humidity countries.



Please contact the factory for information on converting older electrodes to the new 60 kV connectors.

2) FLEXIBLE MOUNTING BRACKETS and 180° ROTATION OF DISPLAY

The IONFIX Pro has the same mounting brackets as the Compact Model. It can be mounted on a bench, below a bench or on a wall.



The display can be turned 180° so that it is easy to read when wall mounted. This can be done at the customers by an experienced technician, but it is best to specify inverted display at time of order.

IONFIX PRO-DM-iss.1

7. COMPETITORS

IONFIX Pro has been designed to compete with the static control companies which compete in the international market with higher power (150W) generators.

Simco

Simco is the leader in all sectors of this market, from small end-of-arm IML generators to full power 150 W units. They have been in the market for over 70 years and have the best distribution.

Our IONFIX Compact compete very well with their smaller generator, the CM Lite.

IONFIX Pro is designed to compete with their 150 W Generators: the CM5-30 and CM5-60. In terms of specification and ease of use by the customer, IONFIX Pro is a better product.



2016 List Prices:

CM5-30 kV: €3480

CM5-60 kV: €4163

They also have a special generator for 30 KV applications where there is price competition:

CM Medium 30 kV: €2513

Eltex

Eltex have lost their lead in this market, but have a good position due to history. They are still strong in the important German OEM market, but do not have a strong international sales network.



2016 List Prices:

KNH 35 (30 kV) > €4000

KNH 65 (60 kV) > €4000

Haug



Haug

HW30 40 kV 160 W €3340

IONFIX PRO-DM-iss.1

8. THE MARKET FOR IONFIX PRO

The Distributor Manual for the IONFIX Compact goes into detail about the loads and applications for which the Compact generator has been designed.

For those loads and applications the IONFIX Compact is the natural choice – it offers a high specification in a competitive price package. Please re-read the Manual for the IONFIX Compact to see its load capability.

The market for the IONFIX Pro can be defined as those applications for which the IONFIX Compact is not suited. This includes:

30 kV applications

needing more power than is available from the IONFIX Compact, which may be because:

- a) the system is bigger – longer Bars or system than the Compact can power. This is mainly Bar lengths – the cable is not a big load.
- b) the system needs intense ion generation – for example if the Bar is very close to a metal cylinder when pinning material to it.
- c) for higher speed applications where the current requirement is driven by speed rather than the application

60 kV applications

60 kV is needed for longer distances and thicker materials. Typical applications are:

- a) Pinning thick piles of paper or other material – for example, telephone directories.
- b) Holding thick laminated materials together – the big example here is for worktops, where a (+) 60 kV generator and a (-) 60 kV generator are needed to hold the laminate together before it goes into the press. This is a big market.
- c) Non-stop rewinders, where the speed and distance

Connectivity

If the customer wants to use the fieldbus capability of the IONFIX Pro. This is not available on the IONFIX Compact.

9. TECHNICAL SPECIFICATIONS

Electrical Characteristics

Input rating:	90 – 250 V AC, 47 – 63 Hz, 3 A max.
Input connector:	IEC 60320 C14 inlet.
Output rating, 30 kV variants:	0-30 kV DC, 5 mA max.
Output rating, 60 kV variants:	0-60 kV DC, 2.5 mA max.
Output connector type:	4 x Fraser 30/60 kV tubular spring-contact HV connector.
Remote interface connector:	25-pin subminiature D-type, female. Mating plug Amphenol L717DB25P or equivalent.

Environmental Conditions

Ambient temperature:	0 – 50 °C.
Relative humidity:	Maximum 70%, non-condensing.
Ingress protection:	IP20.

Mechanical

Dimensions (D x W x H):	337 mm x 268 mm x 104 mm.
Mass:	8 kg.

IONFIX PRO-DM-iss.1

10. QUICK INSTALLATION GUIDE

This is a quick guide - please refer to the full manual for detailed installation instructions



- Installation must only be carried out by suitably qualified personnel.
- The generator **must** be earthed via both the power cable and external earth wire.
- Disconnect the mains power cable before starting any work on the generator.
- Connect only approved charging electrodes to the generator.
- Do not touch the charging electrode(s) when energised.

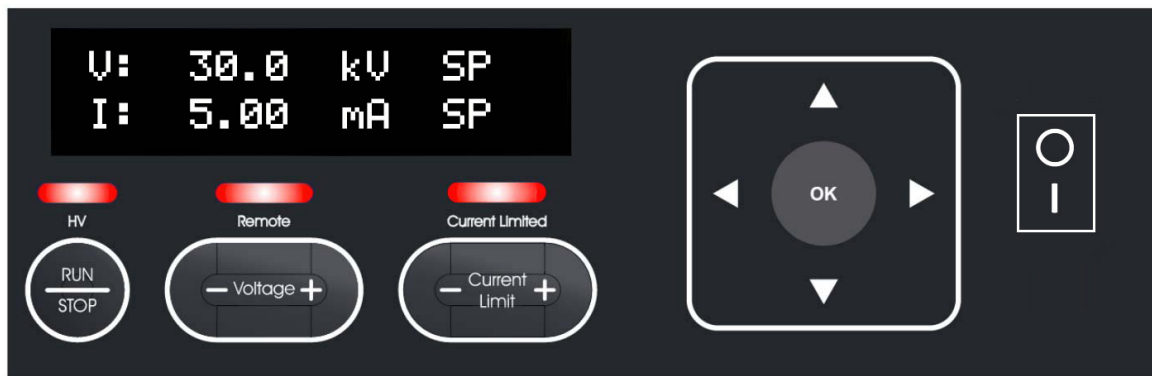
1. Ensure that the generator is correctly earthed as described above.
2. Securely mount the generator in a visible, accessible and stable location using the supplied mounting brackets if necessary. Ensure that the location is clean and dry.
3. Connect the charging electrode(s) to the HV output sockets at the rear of the generator. The 4 sockets are connected together internally.



- Do not route HV cables near to sharp metal components.
 - Avoid bends or kinks in the HV cables.
 - Route HV cables separately from low-voltage cables.
 - Keep HV cables as short as practically possible
4. If using the remote interface, connect the cable to the D-type connector. For details, see 'Remote Interface' section of the full generator manual.
 5. Connect the power cable to the generator and connect it to the mains supply.

Controls and Operation

On the front of the generator there is a power switch, a display screen, control buttons and status indicators as shown below.



- **Display:** Indicates the settings and output parameters of the generator, displays the generator configuration menu and any warning messages.
- **'HV' indicator:** Illuminates when the HV output is enabled.
- **'Remote' indicator:** Illuminates when any of the remote control functions are enabled.
- **'Current Limited' indicator:** illuminates when the output current reaches the limit value.
- **RUN/STOP Button:** Toggles the high voltage output of the generator on and off.
- **Voltage +/- Buttons:** Allow the high voltage output level of the generator to be adjusted.
- **Current Limit +/- Buttons:** Allow the output current limit level of the generator to be adjusted.
- **4-way keypad and OK Button:** Used to access the generator configuration menu and change parameters.

Operating the generator

To power up the generator, put the main power switch on the front panel into the 'ON' (I) position.

After a start-up message, the screen will show the voltage and current setpoint values (indicated by 'SP' after the values).

- To adjust the output voltage, use the 'Voltage +' and 'Voltage -' buttons.
- To adjust the current limit, use the 'Current -' and 'Current +'.
- To toggle the high voltage output of the generator on or off, press the 'RUN/STOP' button.

When the high voltage is enabled, 'OP' will be shown after the actual output values on the screen.



If the remote on/off function is **not** enabled, the generator HV output will always be OFF when the generator is powered up. If it is necessary for the generator to power up with the HV output enabled, use the remote on/off function to achieve this.

IONFIX PRO-DM-iss.1

Commissioning

The following is a brief guide to setting up the generator for use as a continuous charging source.

When delivered, the output voltage setpoint will be set to zero, and the current limit set to its maximum value.

- Enable the HV output (press 'RUN/STOP') and increase the output voltage until the desired pinning effect is achieved. Increase the voltage by around 10% above this to accommodate process and material variations.
- To minimise electrode wear when the material is not present, reduce the current limit setting ensuring that the 'current limited' indicator does not illuminate when the material is present.

For advice about tuning the generator settings to best suit a particular process, please contact Fraser.

Generator configuration menu

The generator configuration menu has three sections:

1. **Remote Mode** – allows the generator remote interface to be enabled and configured.
2. **Advanced Settings** – allows various aspects of generator operation to be adjusted.
3. **System Information** – provides diagnostic information about the generator.

See the full operating instructions for details of the configuration menu and settings/parameters.

To access the menu the following keys are used:

- **Right (▶)**: Enter menu system, move down to a lower level, access parameter to adjust.
- **Left (◀)**: Move up to a higher menu level, exit menu system.
- **Up (▲)**: Move up a list of menu items, increase parameter value.
- **Down (▼)**: Move down a list of menu items, decrease parameter value.
- **OK**: Move down to a lower menu level, save parameter setting.

Pressing any of the setpoint adjustment buttons (Voltage +/-, Current +/-) whilst using the menu will exit the menu system.

Remote Interface

The generator is equipped with a remote control and monitoring interface, provided on a 25-way D-type socket at the rear of the generator. The functions and connections are as follows:

Pin No.	Function	Pin No.	Function
1	Remote on/off input +ve	14	Remote on/off input -ve
2	Remote current setpoint input	15	GND (0 V)
3	Remote voltage setpoint input	16	GND (0 V)
4	Remote voltage monitor output	17	GND (0 V)
5	Remote current monitor output	18	Reserved, do not connect
6	Reserved, do not connect	19	GND (0 V)
7	+12 V reference output	20	GND (0 V)
8	Reserved, do not connect	21	Reserved, do not connect
9	Arc/Limit open collector	22	Arc/Limit open emitter
10	Operating open collector	23	Operating open emitter
11	Reserved	24	GND (0 V)
12	Not connected	25	Reserved
13	Not connected		

See the full operating instructions for complete details of the remote interface including connection examples.

11. TROUBLESHOOTING

In case of problems with the generator, consult the following table to aid diagnosis and remedy.

Problem	Cause	Remedy
No output voltage Display off	Power supply not connected or energised.	Check power supply connections.
	Inlet fuse blown.	Replace fuse.
	Hardware fault.	Contact Fraser.
No output voltage Display on	Voltage setpoint not changed from default 0.0 kV or remote setpoint not provided.	Change setpoint using Voltage +/- buttons or provide signal on remote interface.
	Remote on/off enabled, but no remote on/off signal provided.	Provide remote on/off signal.
	Current limit set too low.	Increase current limit using Current +/- buttons.
All LEDs flashing 'OVERLOAD' shown on display	Arcing or short-circuit on HV output due to electrode or cable fault.	Check and rectify electrode or cable faults.
	Generator overloaded.	Move charging electrode(s) further from counter-electrode.
All LEDs flashing 'OVER TEMP' shown on display	Generator internal temperature too high.	Move generator to cooler location. Reduce loading on generator.
All LEDs flashing 'UNDER VOLTAGE' shown on display	Supply voltage too low.	Check supply voltage.
All LEDs flashing 'OVER VOLTAGE' shown on display	Supply voltage too high.	Check supply voltage.
All LEDs flashing Any other message shown on display	Internal fault with generator.	Contact Fraser.

IONFIX PRO-DM-iss.1

12. CONNECTOR COMPATIBILITY

Simco

The IONFIX Static Generators have a standard 60 kV rated connection for both 30 kV and 60 kV models.

We do this to make the 30 kV generators more resistant to operating in high humidity locations—which is an important advantage over our competitors 30 kV generators.

For compatibility with Simco 30 kV generation equipment, please follow the following guidelines.

Replacement Bars / Electrodes for use with 30 kV Simco Generators

Generally, the generator should have a longer life than the bar or other electrode which is being powered. In many applications the electrodes are “wear” parts and need to be replaced periodically.

If they have the correct connector, all modern Fraser 30 kV Bars and other electrodes can be used with Simco 30 kV Generator models ECM 30, ECM-Lite, CM5-30, CM-Medium, CM-Lite.

The best way to obtain the right connector for Fraser Bar / electrodes for use on a Simco generator is to specify it on the order. We will then fit the correct connector to the bar / electrode for compatibility with the Simco generator.

Replacing Simco 30 kV Generators with Fraser 30 kV IONFIX Generators

IMPORTANT: This operation should be carried out by an electrician. Clean hands are essential to avoid contamination of the insulator tubes.

Existing Simco Bars will not have the correct connector for use with IONFIX Generators. The Fraser connector, with the white tube in the photo below, is much longer



Simco 30 kV Connector with grey tube and grey PMA threaded fitting.

Fraser Universal Connector with white tube and black PMA threaded fitting. The PMA fittings are the same size and thread—the only difference is colour.

Tools needed: 2 mm Allen key for the Simco socket screw, 1.5 mm Allen key for the Fraser socket screw.

2 mm flat blade screwdriver

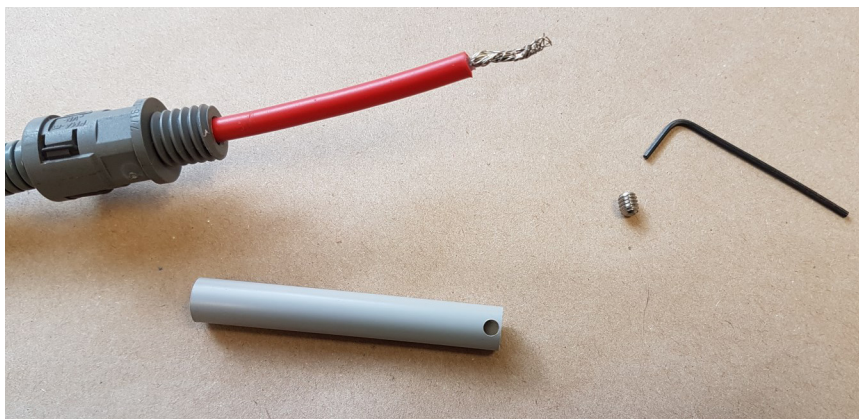
Parts to be supplied by Fraser: white insulator tube and metal end connection, including spring.



IONFIX PRO-DM-iss.1

Step 1

Remove the socket screw which holds the assembly together.



Use the 2 mm screwdriver to remove the clip on the threaded fitting.

Pull off the fitting.

Step 2

A longer length of HT cable needs to be released from the plastic conduit.



Carefully cut the conduit so that at least 135 mm of the red cable is visible.

Be very careful not to cut the cable. If the cable is accidentally cut it is best to start again, cutting off the damaged cable

Step 3

Slide the white Fraser connector over the cable and secure the cable conductors inside the new Fraser metal fitting with the 1.5 mm socket screw. Tug test to make sure that it the connection is secure. Ready to use.



Compatibility of IONFIX Connectors for older Fraser 30 kV and 50 kV Models

The IONFIX Static Generators have a standard 60 kV rated connection for both 30 kV and 60 kV models.

We do this to make the 30 kV generators more resistant to operating in high humidity locations—which is an important advantage over our competitors' 30 kV generators.

For compatibility with older Fraser generation equipment, please follow the following guidelines.

Replacement Bars / Electrodes for use with older 30 kV and 50 kV Generators

Generally, the generator should have a longer life than the bar or other electrode which is being powered. In many applications the electrodes are “wear” parts and need to be replaced periodically.

The best way to obtain the right connector for new Fraser Bar / electrodes for use on older Fraser generators is to specify it on the order. Please specify which Generator it is to be used with—for example 7360 or 75150. We will then fit the correct connector to the bar / electrode for compatibility with the older generator.

Replacing older Fraser bars with connectors for IONFIX Generators

IMPORTANT: This operation should be carried out by an electrician. Clean hands are essential to avoid contamination of the insulator tubes.

Existing older Fraser 30 kV or 50 kV Bars will not have the correct connector for use with IONFIX Generators. The new Fraser connector, with the white tube in the photo below, is much longer

Tools needed: 1.5 mm Allen key for the Fraser socket screw.

2 mm flat blade screwdriver

Parts to be supplied by Fraser: white insulator tube:



Older 30 kV Fraser connector

Older 50 kV Fraser connector, with longer tube than 30 kV, but not as long as IONFIX.

Fraser Universal Connector with white tube and black PMA threaded fitting.

Tools needed: 2 mm Allen key for the Simco socket screw, 1.5 mm Allen key for the Fraser socket screw.

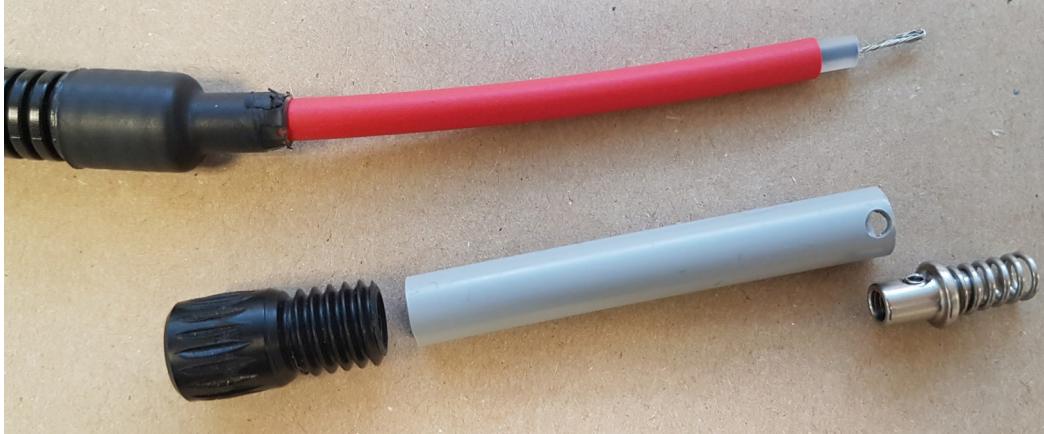
2 mm flat blade screwdriver

Parts to be supplied by Fraser: white insulator tube and metal end connection, including spring.



Step 1

Remove the socket screw which holds the assembly together. Twist off the metal spring holder with an anti-clockwise movement - there is an internal thread holding the cable in addition to the socket screw.



Step 2

A longer length of HT cable needs to be released from the plastic conduit



Carefully cut the shrink sleeve and conduit so that at least 140mm of the red cable jacket is visible.

Be very careful not to cut the cable. If the cable is accidentally cut it is best to start again, cutting off the damaged cable.

Step 3

Slide the white connector tube over the cable and turn the spring holder onto the clear inner cable in a clockwise direction to secure it in the internal thread. The conductor can then be secured with the 1.5 mm socket screw. Tug test to make sure that the connection is secure. Ready to use.



IONFIX PRO-DM-iss.1