



**FUSAMATIC™**  
**MULTISEAL TAPPING TEE**  
STACKLOAD OR UNDERCLAMP  
FOR GAS AND WATER



# MISSION

**“The Fusion Group Strategy is to become the customers’ preferred partner as the leading innovator, manufacturer and supplier of products and services for gas and water polyethylene pipeline systems, worldwide...”**

## CUSTOMER PROMISES

*Our unique selling propositions enable us to give eight important promises to our customers:*

**SOLUTIONS, NOT ONLY PRODUCTS**

**GLOBAL LEADERSHIP AND LOCAL COMMITMENT**

**QUALITY IN EVERY STEP**

**PROMPT RESPONSE**

**LASTING INNOVATIONS**

**TOTAL SAVINGS**

**A LONG-TERM PARTNERSHIP**

**TO BE EFFECTIVE AND EASY**



# ABOUT

**Fusion Group** pioneered polyethylene pipe jointing in the UK and across the globe, and continues to provide innovative solutions for multiple industries. In 2017, Fusion became a member of the AVK Group of Companies, a partnership that has resulted in a broader product and service offer, a strengthened manufacturing base, and an amalgamation of expertise and ideas.

## Polyethylene Solutions

Fusion is built around the knowledge and expertise of our people and their passion to deliver innovation. Part of our mission is to support you with a complete polyethylene solutions package for gas and water infrastructure, mining, energy and agricultural projects.

Our specialist teams are able to work with you throughout every step of your customer journey - from advice on site specification and product selection, all the way to providing installer training to your teams. When you work with Fusion, our promise to you is that you can expect quality throughout every step of the process and can trust that we will always be here for you.

## World-Class Manufacturing

Fusion boasts world class manufacturing, testing, and inspection facilities, with lean principles of continuous improvement integrated into our manufacturing culture.

We pride ourselves on our products being fully traceable, right down to the core components.

## High Standards

Fusion and AVK believe in much more than simply supplying a finished product to a customer. In order to assure you of our continued excellence, we have achieved ISO 9001 and ISO/TS 29001 certification.

We also hold many 3rd party product approvals and are regularly audited by organisations such as Bureau Veritas, AMI, BSI, DVGW, INSTA-CERT and others ensure our products meet – and often exceed – the highest standards of safety and durability.

For further information on the Fusion Group product range download the Global PE Product Offer brochure from our website - [www.fusiongroup.com](http://www.fusiongroup.com)  
The Global PE Product Offer brochure features our extensive product range; PE ball and butterfly valves, electrofusion, spigot and transition fittings, access systems and associated equipment and ancillaries.





# FUSAMATIC™ MULTISEAL TAPPING TEE FOR GAS AND WATER



Manufactured and tested in our world-class facilities, a range of Multiseal Tapping Tees in sizes which range from d40 - 400/450 with 20, 25, 32, 40, 50 and 63mm outlets.

Multiseal Tapping Tees deliver security, safety, simplicity and speed at the point of installation and offer a solution to providing a direct connection from a live or dead main.

All Fusion's electrofusion fittings are individually inspected using a computerised monitoring system that utilises advanced barcode technology. The barcode provides full individual fitting traceability right down to the polymer batch.

## Product range overview



**MULTISEAL TAPPING TEE STACKLOAD**  
PE100  
Water PN16 / Gas 10 Bar  
(UK Gas Applications -  
Gas 5.5 Bar (Class B) /  
Gas 7 Bar (Class C))  
20, 25 and 32mm Outlet  
d63x20-355x32



**MULTISEAL TAPPING TEE STACKLOAD**  
PE100  
Water PN16 / Gas 10 Bar  
(UK Gas Applications -  
Gas 5.5 Bar (Class B) /  
Gas 7 Bar (Class C))  
63mm Outlet  
d250x63-400/450x63



**MULTISEAL TAPPING TEE UNDERCLAMP**  
PE100  
Water PN16 / Gas 10 Bar  
(UK Gas Applications -  
Gas 5.5 Bar (Class B) /  
Gas 7 Bar (Class C))  
20, 25 and 32mm Outlet  
d40x20-225x32



**MULTISEAL TAPPING TEE UNDERCLAMP**  
PE100  
Water PN16 / Gas 10 Bar  
(UK Gas Applications -  
Gas 5.5 Bar (Class B) /  
Gas 7 Bar (Class C))  
40, 50 and 63mm Outlet  
d63x40-225x63

## Specifications

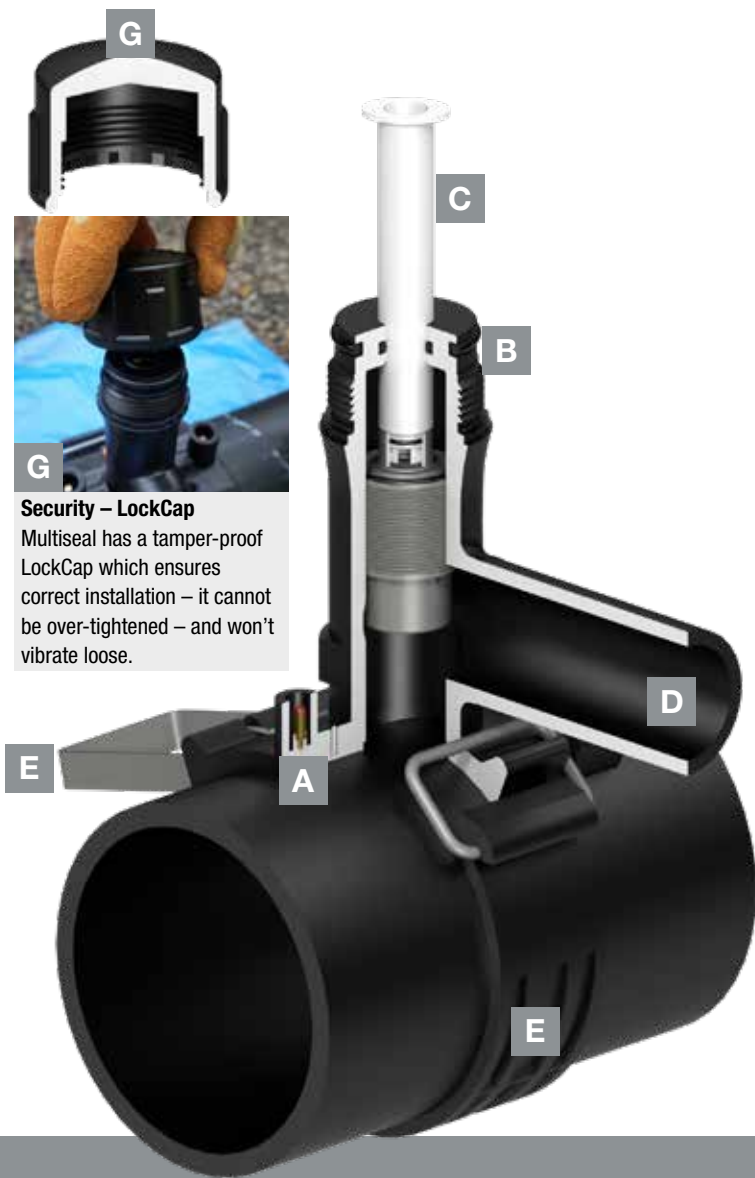
Multiseal tapping tees are tested and have 3rd party approval against the following standards;

- EN 12201-3
- EN 1555-3
- AS/NZS 4129
- ISO Type 5
- WaterMark
- ISO4427
- ISO4437
- GIS/PL2-4 (Certain sizes only - contact us for further details).

Multiseal tapping tees are manufactured in the UK.



# FUSAMATIC

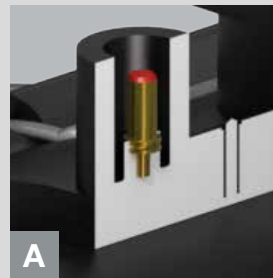


## Security – LockCap

Multiseal has a tamper-proof LockCap which ensures correct installation – it cannot be over-tightened – and won't vibrate loose.

## Features and Benefits

- Multiseal saddle and fusion mat have been designed to minimise joint cycle times.
- Thread profile on the Multiseal's internal cutting mechanism reduces the level of torque required to drive the cutter through the body of the main.
- Corrosion resistant brass terminal pins.
- Cutter blades manufactured from corrosion resistant stainless steel.



## Fusamatic Pin

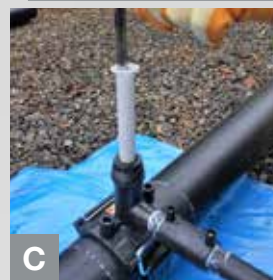
Invented by Fusion, the Fusamatic pin provides a totally automatic method for ensuring the correct welding parameters are used. Within each Fusamatic pin is a resistor. When the electrofusion box is connected to the fitting, the Fusamatic pin enables it to automatically identify the correct fusion time required to make the joint.

All the operator has to do is press go!



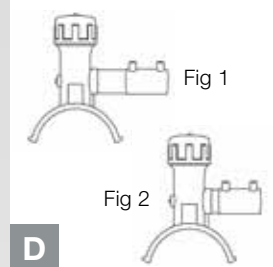
## Safety – O-ring Seals

Multiseal tapping tees incorporate two O-ring seals; an internal O-ring in the body of the fitting which seals on the cutter, and an external O-ring which seals against the tightened LockCap. Together these seals protect against leakage, and in conjunction with the optional cutter tube, deliver quality live connections.



## Optional Cutter Tube

Optional cutter tube delivers quality live connections. The cutter tube locks into the integral cutter which allows for leak free cut through of the mains pipe. Important for live or medium pressure applications. The tube must be specified at the time of order, simply add 'T' to the fitting code e.g. MTBKHA63X32T



## Second Chance – Double Spigot Outlet

The outlet spigot on Multiseal Tapping Tees gives the installer a 'second chance' – if problems occur with the initial service connection (Fig 1) there is sufficient spigot length to cut off the coupler and fuse a second fitting (Fig 2).



## Simplicity – Stackload or Underclamp

Installers can buy Multiseal as a standard stackloading tee, or opt for the sacrificial toggle-clamp underpart. The toggle-clamp design snaps quickly in place, saves the installer time, avoids the need for specialist tooling, provides proof of clamping during the fusion cycle and applies the right amount of force every time for a quality joint.



## Barcode / QR Code

Quality control is central to the success of Fusion's fittings. The unique barcode configuration (compliant with ISO 13950 welding and ISO 12176-4 traceability), including QR code, provides full traceability of raw material for each individual fitting and welding information when used in conjunction with electrofusion boxes equipped with a barcode scanner.

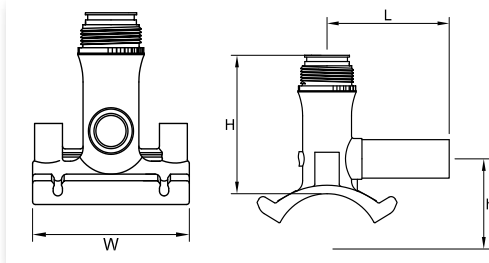


# Multiseal Tapping Tee | Stackload

## 20-32mm outlet

### Specification

- PE100
- Water PN16
- Gas 10 Bar
- For UK Gas applications:
  - Gas 5.5 Bar (Class B)
  - Gas 7 Bar (Class C)
- d63x20 - 355x32



4mm Pin Fitting Code	4.7mm Pin Fitting Code	Fitting Size	L	H	h	W	Fusion Time	Cooling Time	Weight	Box Quantity	Box Size (W X L X D)	Delivery Code
		mm	mm	mm	mm	mm	secs	mins	Kg		mm	
MTBKHF63X20	MTBKHA63X20	63 x 20	105	119	62	120	80	10	0.54	15	295 X 485 X 333	C
MTBKHF63X25	MTBKHA63X25	63 x 25	105	119	62	120	80	10	0.54	15	295 X 485 X 333	C
MTBKHF63X32	MTBKHA63X32	63 x 32	105	119	62	120	80	10	0.54	15	295 X 485 X 333	A
MTBKHF75X20	MTBKHA75X20	75 x 20	105	110	77	120	90	10	0.46	15	295 X 485 X 333	C
MTBKHF75X25	MTBKHA75X25	75 x 25	105	110	77	120	90	10	0.46	15	295 X 485 X 333	C
MTBKHF75X32	MTBKHA75X32	75 x 32	105	110	77	120	90	10	0.48	15	295 X 485 X 333	C
MTBKHF90X20	MTBKHA90X20	90 x 20	105	110	77	120	90	10	0.38	15	295 X 485 X 333	C
MTBKHF90X25	MTBKHA90X25	90 x 25	105	110	77	120	90	10	0.40	15	295 X 485 X 333	C
MTBKHF90X32	MTBKHA90X32	90 x 32	105	110	77	120	90	10	0.40	15	295 X 485 X 333	A
MTBKHF110X20	MTBKHA110X20	110 x 20	105	117	87	120	80	10	0.31	15	295 X 485 X 333	C
MTBKHF110X25	MTBKHA110X25	110 x 25	105	117	87	120	80	10	0.31	15	295 X 485 X 333	C
MTBKHF110X32	MTBKHA110X32	110 x 32	105	117	87	120	80	10	0.38	15	295 X 485 X 333	A
MTBKHF125X20	MTBKHA125X20	125 x 20	105	117	95	120	80	10	0.31	15	295 X 485 X 333	C
MTBKHF125X25	MTBKHA125X25	125 x 25	105	117	95	120	80	10	0.39	15	295 X 485 X 333	B
MTBKHF125X32	MTBKHA125X32	125 x 32	105	117	95	120	80	10	0.39	15	295 X 485 X 333	A
MTBKHF160X20	MTBKHA160X20	160 x 20	105	122	112	120	100	10	0.32	15	295 X 485 X 333	C
MTBKHF160X25	MTBKHA160X25	160 x 25	105	122	112	120	100	10	0.32	15	295 X 485 X 333	C
MTBKHF160X32	MTBKHA160X32	160 x 32	105	122	112	120	100	10	0.41	15	295 X 485 X 333	A
MTBKHF180X20	MTBKHA180X20	180 x 20	105	122	122	120	100	10	0.35	15	295 X 485 X 333	C
MTBKHF180X25	MTBKHA180X25	180 x 25	105	122	122	120	100	10	0.41	15	295 X 485 X 333	C
MTBKHF180X32	MTBKHA180X32	180 x 32	105	122	122	120	100	10	0.41	15	295 X 485 X 333	A
MTBKHF200X20	MTBKHA200X20	200 x 20	105	122	132	120	100	10	0.30	15	295 X 485 X 333	C
MTBKHF200X25	MTBKHA200X25	200 x 25	105	122	132	120	100	10	0.32	15	295 X 485 X 333	C
MTBKHF200X32	MTBKHA200X32	200 x 32	105	122	132	120	100	10	0.38	15	295 X 485 X 333	C
MTBKHF225X20	MTBKHA225X20	225 x 20	105	122	145	120	100	10	0.32	15	295 X 485 X 333	C
MTBKHF225X25	MTBKHA225X25	225 x 25	105	122	145	120	100	10	0.41	15	295 X 485 X 333	C
MTBKHF225X32	MTBKHA225X32	225 x 32	105	122	145	120	100	10	0.40	15	295 X 485 X 333	A
MTBKHF250X20	MTBKHA250X20	250 x 20	105	122	158	120	100	10	0.37	15	295 X 485 X 333	C
MTBKHF250X25	MTBKHA250X25	250 x 25	105	122	158	120	100	10	0.37	15	295 X 485 X 333	C
MTBKHF250X32	MTBKHA250X32	250 x 32	105	122	158	120	100	10	0.37	15	295 X 485 X 333	A
MTBKHF280X20	MTBKHA280X20	280 x 20	105	122	176	120	100	10	0.43	15	295 X 485 X 333	C
MTBKHF280X25	MTBKHA280X25	280 x 25	105	122	176	120	100	10	0.43	15	295 X 485 X 333	C
MTBKHF280X32	MTBKHA280X32	280 x 32	105	122	176	120	100	10	0.43	15	295 X 485 X 333	C
MTBKHF315X20	MTBKHA315X20	315 x 20	105	122	194	120	100	10	0.41	15	295 X 485 X 333	C
MTBKHF315X25	MTBKHA315X25	315 x 25	105	122	194	120	100	10	0.41	15	295 X 485 X 333	C
MTBKHF315X32	MTBKHA315X32	315 x 32	105	122	194	120	100	10	0.41	15	295 X 485 X 333	B
MTBKHF355X20	MTBKHA355X20	355 x 20	105	122	214	120	100	10	0.40	15	295 X 485 X 333	C
MTBKHF355X25	MTBKHA355X25	355 x 25	105	122	214	120	100	10	0.40	15	295 X 485 X 333	C
MTBKHF355X32	MTBKHA355X32	355 x 32	105	122	214	120	100	10	0.40	15	295 X 485 X 333	A

### Optional Cutter Tube

To order Multiseal with the optional cutter tube simply add 'T' to the fitting code e.g. MTBKHA63X32T.

The tube works in conjunction with an internal O-ring seal in the body of the fitting to deliver safe live connections.

See page 5 for further details.





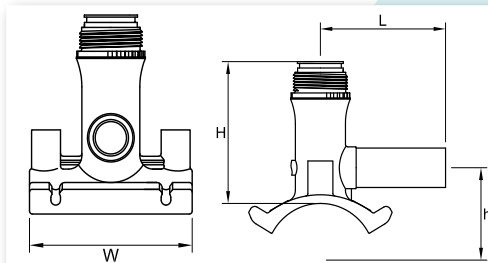


# Multiseal Tapping Tee | Stackload

## 63mm outlet

### Specification

- PE100
- Water PN16
- Gas 10 Bar
- For UK Gas applications:
  - Gas 5.5 Bar (Class B)
  - Gas 7 Bar (Class C)
- d250x63 - 400/450x63
- 40 and 50mm Outlet available upon request



4mm Pin Fitting Code	4.7mm Pin Fitting Code	Fitting Size	L	H	h	W	Fusion Time	Cooling Time	Weight	Box Quantity	Box Size (W X L X D)	Delivery Code
											mm	
MTBKHF250X63	MTBKHA250X63	250 x 63	165	183	182	146	110	10	0.87	10	295 X 485 X 333	B
MTBKHF280X63	MTBKHA280X63	280 x 63	165	184	196	146	120	10	0.86	10	295 X 485 X 333	C
MTBKHF315X63	MTBKHA315X63	315 x 63	165	187	217	146	120	10	0.89	10	295 X 485 X 333	A
MTBKHF355X63	MTBKHA355X63	355 x 63	165	187	238	146	120	10	0.91	10	295 X 485 X 333	A
MTKHFA400450X63T	MTKHA400450X63T	400/450 x 63	165	185	258 / 283	146	120	15	0.94	10	295 X 485 X 333	B



### Optional Cutter Tube

To order Multiseal with the optional cutter tube simply add 'T' to the fitting code e.g. MTBKHA250X63T.

The tube works in conjunction with an internal O-ring seal in the body of the fitting to deliver safe live connections.

See page 5 for further details.

Please note the NEW 400/450 Multiseal comes complete with Tube.

**New**  
400/450 size  
with 63mm  
outlet



## Multiseal Tapping Tee | Stackload

### NEW size - 400/450 x 63mm outlet

- For use on pipes up to SDR11.
- One electrofusion fitting fits both 400 and 450mm mains pipe resulting in reduced stockholding.
- Larger base footprint ensures correct alignment.
- Can be used with existing top-load clamping equipment reducing the need for expensive additional tooling or clamps.



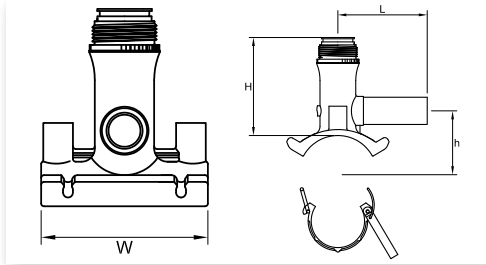
# Multiseal Tapping Tee | Underclamp

## 20-32mm outlet

### Specification

- PE100
- Water PN16
- Gas 10 Bar
- For UK Gas applications:
  - Gas 5.5 Bar (Class B)
  - Gas 7 Bar (Class C)
- d40x20 - 225x32

*\*Please Note:  
Different underclamp system  
than pictured on sizes 40 x 20,  
25, 32 and 50 x 20, 25, 32  
that requires a screwdriver for  
installation.*



4mm Pin Fitting Code	4.7mm Pin Fitting Code	Fitting Size	L	H	h	W	Fusion Time	Cooling Time	Weight	Box Quantity	Box Size (W X L X D)		Delivery Code
											mm	mm	
MTBKHF40X20U	MTBKHA40X20U	40 x 20	105	110	50	120	40	3	0.38	10	295 X 485 X 199	C	
MTBKHF40X25U	MTBKHA40X25U	40 x 25	105	110	50	120	40	3	0.38	10	295 X 485 X 199	A	
MTBKHF40X32U	MTBKHA40X32U	40 x 32	105	110	50	120	40	3	0.38	10	295 X 485 X 199	B	
MTBKHF50X20U	MTBKHA50X20U	50 x 20	105	110	50	120	40	3	0.40	10	295 X 485 X 199	C	
MTBKHF50X25U	MTBKHA50X25U	50 x 25	105	110	50	120	40	3	0.38	10	295 X 485 X 199	C	
MTBKHF50X32U	MTBKHA50X32U	50 x 32	105	110	50	120	40	3	0.40	10	295 X 485 X 199	A	
MTBKHF63X20U	MTBKHA63X20U	63 x 20	105	119	62	120	80	10	0.52	10	295 X 485 X 199	B	
MTBKHF63X25U	MTBKHA63X25U	63 x 25	105	119	62	120	80	10	0.54	10	295 X 485 X 199	A	
MTBKHF63X32U	MTBKHA63X32U	63 x 32	105	119	62	120	80	10	0.54	10	295 X 485 X 199	A	
MTBKHF75X20U	MTBKHA75X20U	75 x 20	105	110	77	120	90	10	0.68	10	295 X 485 X 333	C	
MTBKHF75X25U	MTBKHA75X25U	75 x 25	105	110	77	120	90	10	0.68	10	295 X 485 X 333	A	
MTBKHF75X32U	MTBKHA75X32U	75 x 32	105	110	77	120	90	10	0.68	10	295 X 485 X 333	B	
MTBKHF90X20U	MTBKHA90X20U	90 x 20	105	110	77	120	90	10	0.61	10	295 X 485 X 333	C	
MTBKHF90X25U	MTBKHA90X25U	90 x 25	105	110	77	120	90	10	0.61	10	295 X 485 X 333	A	
MTBKHF90X32U	MTBKHA90X32U	90 x 32	105	110	77	120	90	10	0.61	10	295 X 485 X 333	A	
MTBKHF110X20U	MTBKHA110X20U	110 x 20	105	117	87	120	80	10	0.64	10	295 X 485 X 333	B	
MTBKHF110X25U	MTBKHA110X25U	110 x 25	105	117	87	120	80	10	0.64	10	295 X 485 X 333	A	
MTBKHF110X32U	MTBKHA110X32U	110 x 32	105	117	87	120	80	10	0.64	10	295 X 485 X 333	A	
MTBKHF125X20U	MTBKHA125X20U	125 x 20	105	117	95	120	80	10	0.65	10	295 X 485 X 333	C	
MTBKHF125X25U	MTBKHA125X25U	125 x 25	105	117	95	120	80	10	0.66	10	295 X 485 X 333	A	
MTBKHF125X32U	MTBKHA125X32U	125 x 32	105	117	95	120	80	10	0.65	10	295 X 485 X 333	A	
MTBKHF160X20U	MTBKHA160X20U	160 x 20	105	122	112	120	100	10	0.73	10	295 X 485 X 333	C	
MTBKHF160X25U	MTBKHA160X25U	160 x 25	105	122	112	120	100	10	0.73	10	295 X 485 X 333	A	
MTBKHF160X32U	MTBKHA160X32U	160 x 32	105	122	112	120	100	10	0.73	10	295 X 485 X 333	A	
MTBKHF180X20U	MTBKHA180X20U	180 x 20	105	122	122	120	100	10	0.75	10	295 X 485 X 333	C	
MTBKHF180X25U	MTBKHA180X25U	180 x 25	105	122	122	120	100	10	0.75	10	295 X 485 X 333	A	
MTBKHF180X32U	MTBKHA180X32U	180 x 32	105	122	122	120	100	10	0.73	10	295 X 485 X 333	A	
MTBKHF200X20U	MTBKHA200X20U	200 x 20	105	122	132	120	100	10	0.73	10	295 X 485 X 333	C	
MTBKHF200X25U	MTBKHA200X25U	200 x 25	105	122	132	120	100	10	0.73	10	295 X 485 X 333	B	
MTBKHF200X32U	MTBKHA200X32U	200 x 32	105	122	132	120	100	10	0.73	10	295 X 485 X 333	A	
MTBKHF225X20U	MTBKHA225X20U	225 x 20	105	122	145	120	100	10	0.76	10	295 X 485 X 424	C	
MTBKHF225X25U	MTBKHA225X25U	225 x 25	105	122	145	120	100	10	0.78	10	295 X 485 X 424	C	
MTBKHF225X32U	MTBKHA225X32U	225 x 32	105	122	145	120	100	10	0.78	10	295 X 485 X 424	B	

### Optional Cutter Tube

To order Multiseal with the optional cutter tube simply add 'T' to the fitting code e.g. MTBKHA63X32UT.

The tube works in conjunction with an internal O-ring seal in the body of the fitting to deliver safe live connections.

See page 5 for further details.





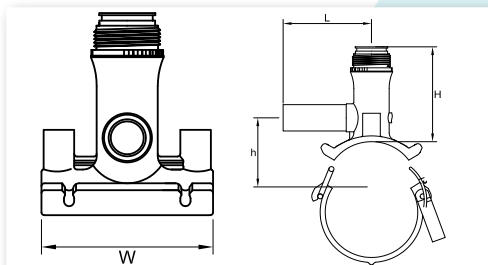


# Multiseal Tapping Tee | Underclamp

## 40 - 63mm outlet

### Specification

- PE100
- Water PN16
- Gas 10 Bar
- For UK Gas applications:
  - Gas 5.5 Bar (Class B)
  - Gas 7 Bar (Class C)
- d63x40 - 225x63



4mm Pin Fitting Code	4.7mm Pin Fitting Code	Fitting Size	L	H	h	W	Fusion Time	Cooling Time	Weight	Box Quantity	Box Size (W X L X D)	Delivery Code
		mm	mm	mm	mm	mm	secs	mins	Kg		mm	
MTBKHF63X40U	MTBKHA63X40U	63 x 40	165	155	59.5	146	100	10	0.95	5	295 X 485 X 333	B
MTBKHF63X50U	MTBKHA63X50U	63 x 50	165	155	59.5	146	100	10	0.96	5	295 X 485 X 333	C
MTBKHF63X63U	MTBKHA63X63U	63 x 63	165	155	59.5	146	100	10	1.02	5	295 X 485 X 333	A
MTBKHF75X40U	MTBKHA75X40U	75 x 40	165	152	57	146	120	10	1.07	5	295 X 485 X 333	B
MTBKHF75X50U	MTBKHA75X50U	75 x 50	165	152	57	146	120	10	1.10	5	295 X 485 X 333	C
MTBKHF75X63U	MTBKHA75X63U	75 x 63	165	152	57	146	120	10	1.15	5	295 X 485 X 333	B
MTBKHF90X40U	MTBKHA90X40U	90 x 40	165	152	57	146	100	10	1.10	5	295 X 485 X 333	B
MTBKHF90X50U	MTBKHA90X50U	90 x 50	165	152	57	146	100	10	1.10	5	295 X 485 X 333	B
MTBKHF90X63U	MTBKHA90X63U	90 x 63	165	152	57	146	100	10	1.12	5	295 X 485 X 333	A
MTBKHF110X40U	MTBKHA110X40U	110 x 40	165	176	105	146	100	10	1.07	5	295 X 485 X 333	B
MTBKHF110X50U	MTBKHA110X50U	110 x 50	165	176	105	146	100	10	1.10	5	295 X 485 X 333	B
MTBKHF110X63U	MTBKHA110X63U	110 x 63	165	176	105	146	100	10	1.15	5	295 X 485 X 333	A
MTBKHF125X40U	MTBKHA125X40U	125 x 40	165	178	112	146	100	10	1.08	5	295 X 485 X 333	B
MTBKHF125X50U	MTBKHA125X50U	125 x 50	165	178	112	146	100	10	1.10	5	295 X 485 X 333	C
MTBKHF125X63U	MTBKHA125X63U	125 x 63	165	178	112	146	100	10	1.15	5	295 X 485 X 333	A
MTBKHF160X40U	MTBKHA160X40U	160 x 40	165	182	137	146	100	10	1.13	5	295 X 485 X 333	A
MTBKHF160X50U	MTBKHA160X50U	160 x 50	165	182	137	146	100	10	1.14	5	295 X 485 X 333	B
MTBKHF160X63U	MTBKHA160X63U	160 x 63	165	182	137	146	100	10	1.19	5	295 X 485 X 333	A
MTBKHF180X40U	MTBKHA180X40U	180 x 40	165	183	147	146	100	10	1.15	5	295 X 485 X 333	C
MTBKHF180X50U	MTBKHA180X50U	180 x 50	165	183	147	146	100	10	1.17	5	295 X 485 X 333	C
MTBKHF180X63U	MTBKHA180X63U	180 x 63	165	183	147	146	100	10	1.21	5	295 X 485 X 333	A
MTBKHF200X40U	MTBKHA200X40U	200 x 40	165	183	157	146	100	10	1.12	5	295 X 485 X 333	C
MTBKHF200X50U	MTBKHA200X50U	200 x 50	165	183	157	146	100	10	1.17	5	295 X 485 X 333	C
MTBKHF200X63U	MTBKHA200X63U	200 x 63	165	183	157	146	100	10	1.21	5	295 X 485 X 333	B
MTBKHF225X40U	MTBKHA225X40U	225 x 40	165	183	169	146	100	10	1.15	5	295 X 485 X 333	C
MTBKHF225X50U	MTBKHA225X50U	225 x 50	165	183	169	146	100	10	1.19	5	295 X 485 X 333	C
MTBKHF225X63U	MTBKHA225X63U	225 x 63	165	183	169	146	100	10	1.24	5	295 X 485 X 333	A



### Optional Cutter Tube

To order Multiseal with the optional cutter tube simply add 'T' to the fitting code e.g. MTBKHA225X40UT.

The tube works in conjunction with an internal O-ring seal in the body of the fitting to deliver safe live connections.

See page 5 for further details.

# THE GOOD GUIDE TO ELECTROFUSION SADDLE JOINTING



This guide will provide basic information to enable the operative to:

- Understand the principles of electrofusion jointing.
- Carry out pre-jointing equipment checks.
- Identify pipe and compatible fittings.
- Inspect for, and identify acceptable quality joints.
- Make satisfactory electrofusion joints from compatible pipes and fittings.
- Site the equipment.

### Safety Notice

To ensure operator safety and comply with Health and Safety regulations all electrofusion control boxes must be operated from an effectively earthed supply in accordance with the manufacturers' operating instructions.

### Equipment required:



Generator of suitable size to power control box - refer to manufacturers' literature for power requirements



Welding tent/shelter and ground sheet



Indelible marker pen



Electrofusion control box with appropriate leads



Re-rounding clamp if pipe has become oval or has a flat spot



Restraining and alignment equipment



Scraping equipment



Pipe cutter



Multiseal test cap





### Principles

Electrofusion is a method of joining PE pipes using fittings with integral heating elements. Sockets fittings are used to join mains and service pipes; and saddle fittings are used to connect services to mains.

The term “socket” covers couplers, elbows, reducers etc.

The term “saddle” covers branch saddles and tapping tees.

The pipe to be joined must be prepared by removing the outer surface layer to a depth of around 0.2mm, then pipe and fitting are clamped together to prevent movement. A voltage is applied across the fitting terminals via a control box.

An electric current is passed through the wire which heats the wire and melts the polymer, fusing the fitting to the pipe. After welding, the joint is allowed to cool before removing the restraining clamps.

### Pipe/Fitting Selection



Check that both pipe(s) and fitting to be joined are compatible, **only compatible materials should be joined together**. Check PN and SDR rating marked on fitting and compare with that of the pipe. If in doubt, seek advice from the pipe or fitting manufacturer.

Fusamatic fittings are suitable for jointing in ambient temperatures between -10°C and +40°C and do not require any form of pre-heat or temperature compensation. For jointing outside these temperatures guidance should be sought from the manufacturer.

### Siting Equipment

Wherever possible, the electrofusion equipment should be placed on a suitable clean, dry base board or ground sheet inside a tent/shelter to minimise contamination.



Ensure that the area where the weld is to be carried out has any surface water removed and that some form of groundsheet is used to isolate the jointing area from the trench floor.

# THE GOOD GUIDE TO ELECTROFUSION SADDLE JOINTING

## Pre-Jointing Checks

- Accept only equipment which has been regularly serviced and is in good condition.
- Check that clamps and liners are correct and clean. Advice on appropriate clamps and scrapers is available from all fitting manufacturers.
- Check that the scrapers are clean and the blade is not damaged and is in good condition.
- Check that the fitting is still in its original packaging and that the bag is not damaged or contains any condensation or dust.

## Pipe preparation - controlling ovality

- Ovality in PE pipe can occur as a result of coiling, storage and transportation.
- Fusamatic Electrofusion fittings have been designed to allow for a small degree of ovality (1 – 2%), but excessive gaps should be avoided by using alignment clamps with a re-rounding ability.
- In order to correct the effects of pipe ovality prior to the electrofusion process it is recommended that re-rounding clamps and/or tools be used as appropriate. This is particularly important where coiled or thin walled pipe is being used as ovality in these cases can be extreme.
- Use the appropriate re-rounding clamp as per manufacturers' instructions.

## Additional equipment required for electrofusion saddle installation;

- 12mm cutter key (min length 150mm) and drive
- For stackload versions an appropriate clamp will be required
- Some clamps which use hexagonal location pins will require a G tool adaptor to correctly centralise the Multiseal Tapping Tee.
- For underclamp saddles with bolted underpart (other than Multiseal with sacrificial underclamp) an appropriate sized socket will be required.

## SADDLE JOINT ASSEMBLY PREPARATION

1. Expose pipe to which saddle is to be welded ensuring the pipe has no inclusions or gouges in the area where the fitting is to be fused.
2. Ensure enough clearance has been provided (in a trench environment) to carry out the installation.
3. Remove loose dirt from the pipe using a prescribed wipe, damp cloth or paper towel and ensure any risk of contamination from trench wall is minimised.
4. With the fitting still in its protective bag, place over required position on pipe. Mark pipe surface 10mm clear all around contact area and cross hatch the area using a marker pen.



5. Scrape the marked area, ensuring that each stroke of the scraper overlaps the preceding one, keeping hand clear of the scraped surface at all times.



6. For skinned pipe use the manufacturers' recommended tools to remove the skin. Some skinned pipe still requires a scraping operation, seek advice from the pipe manufacturer prior to commencement of the installation.

7. Immediately after pipe preparation remove fitting from bag and attach to pipe using suitable clamping equipment.



N.B. For Stackload fittings always bring the clamp to the located fitting, do not slide the fitting under the clamp.

**Important Note:** Do not touch either prepared pipe surface or the electrofusion surface of the saddle.



## MAKING THE WELD

1. Check generator has sufficient fuel.
2. Start the generator and plug the control box input lead into the generator output socket. Connect the control box output leads to the fitting terminals - if automatic fittings and control box are being used, connect the red lead to the fitting terminal with the red pin, connect the black lead to the plain pin.



3. Check that the weld time marked on the fitting is displayed on the control box display. For manual fittings, check the weld time marked on the fitting and enter this figure into the control box. For 'barcode' fittings weld parameters are selected by scanning the barcode with the barcode scanner.

4. Respond to prompts from the box. Press 'START' and hold down until display begins countdown. The weld cycle is complete when the timer reaches zero and the control box 'CYCLE FINISH' indicator shows.

5. Allow weld to cool for the full time stated on the fitting before removing stack load clamp or carrying out any cutting or pressure testing operations.

### Quality Checks

- Check for any error messages on the control box.
- Check fusion indicator has risen on the fitting (saddle fittings only usually have one indicator).
- Check for signs of melt exudation around the saddle base.
- Check that the fitting is square to the main.

## SADDLE OUTLET JOINT ASSEMBLY PREPARATION

1. Check pipe ends are cut square and are free from surface damage and swarf.

2. Wipe loose dirt from the area of outlet to be clamped and fused with a prescribed wipe, damp cloth or paper towel (wipe any contaminates from inside of the outlet).

3. Mark the insertion depth on the pipe by holding the bagged fitting against the pipe.

4. Cross hatch the area to be scraped plus an additional 20-50mm using the indelible marker pen.

5. Scrape outlet of tapping tee using an appropriate mechanical scraper, for the length of the insertion depth plus 10-20mm. Ensure the whole surface area has been scraped.



6. Open fitting bag, check the fitting is clean and immediately place over outlet and push up to centre stops, or for fittings without centre stops insert the pipe to half the overall fitting length (mark this distance on the pipe prior to insertion). Leave bag over fitting for temporary protection.

7. Prepare the service pipe in the same way as the outlet, as previously described.

8. Remove the bag and push the service pipe into the fitting. Mark the penetration depth on the pipe and tighten the restraining clamp.



9. Check fitting penetration - using previously marked lines on pipe. Visually check alignment. Rotate the fitting to ensure no excessive forces are present.

10. Proceed with the weld as detailed previously.

11. Carry out quality checks as detailed below.

### QUALITY CHECKS

- Check for any error messages on the control box
- Check fusion indicators have risen on both sides of the fitting.
- Check for signs of melt exudation from the ends of the fitting.
- Check that the pipe has not moved by looking at the insertion depth marks.

### PRESSURE TESTING OF JOINT

- Once the tapping tee has been fused to the pipe and connected to the service pipe, a pressure test can be carried out using a test cap in accordance with the appropriate industry guidelines. Please note it is not possible to use a universal test cap on a Multiseal Tapping Tee.
- It is recommended that a pressure no greater than 1.5x the working pressure be used to test the joint integrity.

### FAILURE OF PRESSURE TEST AND QUALITY CHECK

If the weld fails any of the above checks then:  
**a)** for sockets - cut out the joint and replace.  
**b)** for saddles - do not tap the main and cut off the stack so it cannot be used. Carry out a repeat weld using a new fitting at least one pipe diameter away from the failed joint (this may differ depending on utility requirements).



# THE GOOD GUIDE TO ELECTROFUSION SADDLE JOINTING



## CUTTING THROUGH MAIN

The Multiseal Tapping Tee offers two cutting options for 'dead' and 'live' mains situations:

### OPTION 1 - DEAD OR LOW PRESSURE

1. Unscrew cap and insert cutter key into integral cutter.
2. Turn the cutter key clockwise until the cutter has cut through the main.



3. Retract cutter until top is flush with stack and refit cap.



**\* Note: with this option a small amount of leakage will occur until the cutter is fully retracted.**

### OPTION 2 - LIVE OR MEDIUM PRESSURE

1. Retract the cutter until its top surface is level with the top of the tapping tee stack.
2. Insert the tube into the cutter by pushing and twisting around 1/4 of a turn. There should be no gap between the cutter and the step on the tube.
3. Insert the 12mm cutter key ensuring it is located at the bottom of the cutter drive.



4. Turn the cutter key clockwise until the cutter has cut through the wall of the main, then retract the cutter until top of the cutter is level with the top of the tapping tee stack.

**DO NOT REMOVE THE CUTTER KEY FROM THE TUBE UNTIL THE CUTTER HAS FULLY RETRACTED.**

Once the cutter is in the fully retracted position, remove the cutter key and then remove the tube. The cap can then be hand tightened on the tapping tee. Please note that once the cap has been fully tightened down it cannot be removed.





## ELECTROFUSION DO'S

- Use a shelter and ground sheet in wet or dry conditions.
- Always use equipment that has been regularly maintained, serviced and calibrated as recommended by the equipment manufacturer.
- Ensure control box voltage is compatible with fitting.
- Always use alignment/restraining clamps.
- Cut pipe ends square for electrofusion sockets.
- Scrape pipe and/or spigot surfaces fully.
- Keep scraped pipe and/or spigot surfaces and fittings clean.
- Ensure correct fusion and cooling times are adhered to.
- Assemble joint and fuse immediately after scraping pipe.
- Carry out quality checks before cutting through pipe.
- Mark the fused fitting with the joint number for traceability.

## ELECTROFUSION DONT'S

- Do not start the joining process unless it can be completed in one go.
- Do not leave fittings out of protective bags.
- Do not use dirty fittings.
- Do not touch prepared pipe surfaces or fusion areas.
- Do not allow assemblies to get damp prior to joining.
- Do not touch fusion indicators during the welding cycle.
- Do not remove joint from clamps until the full cooling time has elapsed.
- Do not remove integral cutter from the saddle once the main has been drilled.
- Do not use control box in a trench with gaseous atmosphere.
- Never fuse a fitting for a second time.
- Failed joints should not be used. Cut out failed joint and fuse another fitting to the required specification on distance from failed fitting.
- Electrofusion joints should not be carried out on slotted or drilled pipe sections, only solid walled pipe sections.

**DISCLAIMER**  
**THE DATA PROVIDED IN THIS DOCUMENT IS NOT BINDING AND MAY BE SUBJECT TO MODIFICATIONS.**  
**THIS DOCUMENT IS SUPPLIED AS A GUIDANCE ONLY. THE WELDING OPERATOR IS RESPONSIBLE FOR ENSURING ALL WORK IS PERFORMED EXCLUSIVELY BY TRAINED AND COMPETENT PERSONNEL AND IN COMPLIANCE WITH BOTH NATIONAL AND INTERNATIONAL RULES AND GUIDELINES FOR ELECTROFUSION INSTALLATION.**

## SAFETY NOTES

Although we make every effort in the design of our products to ensure operator safety, please remember the following precautions:

- Never allow molten or semi-molten polyethylene to come into contact with the skin. If this happens, flush the affected area with cold water and seek expert medical advice.

### **DO NOT UNDER ANY CIRCUMSTANCE ATTEMPT TO PULL THE MATERIAL FROM THE SKIN AS THIS COULD REMOVE THE SKIN AS WELL.**

- Do not attempt to lift long lengths of pipe without assistance or mechanical aid.
- Normal precautions should be observed when handling electrical equipment although, for safety reasons, all 110v portable generator sets should be "Centre Tapped" for site use +55/0/-55 volts.
- To afford protection during jointing, it is advisable to wear protective workwear such as gloves, safety glasses and safety boots.
- Ensure that equipment is serviced on a regular basis as recommended by the equipment manufacturer.

## ADDITIONAL INFORMATION

### STANDARD DIMENSION RATIO (SDR)

The SDR is calculated by dividing the minimum (nominal) outside diameter (OD) by the minimum wall thickness (WT) i.e.

SDR =	OD	125	
	WT	11.4	= 11

From 25mm PE pipe and above the ratio between the outside diameter and the wall thickness remains constant for specific pressure ratings of the pipe.

### **TRANSITION FROM PE PIPE TO OTHER PIPE AND FITTINGS**

Various transition fittings are available to connect to metallic valves, hydrants and pipework. One common method is the use of PE flanges.

It is important to follow manufacturers' recommendations for tightening the necessary bolts. Bolt torque details are supplied with the flanges. It is also important to support any equipment independently of all PE pipework (ie. valves to be mounted on concrete blocks).





# TYPICAL APPLICATION SCHEMATIC

## EXAMPLE OF SOLUTIONS PACKAGE

Fusion Group are here to support you with a complete polyethylene solutions package for your gas and water infrastructure project. For the full range visit [www.fusiongroup.com](http://www.fusiongroup.com)



**A**  
**Electrofusion equal tee**  
Sizes 20 - 250mm  
**NEW range of large diameter equal tees now available in sizes 200, 225 and 250mm**



**B**  
**Electrofusion coupler**  
Sizes 20 - 630mm



**C**  
**Spigot outlet branch saddle**  
Various options available with stackload, underclamp or understrap variants  
Sizes range from 40 – 630mm with various outlet sizes



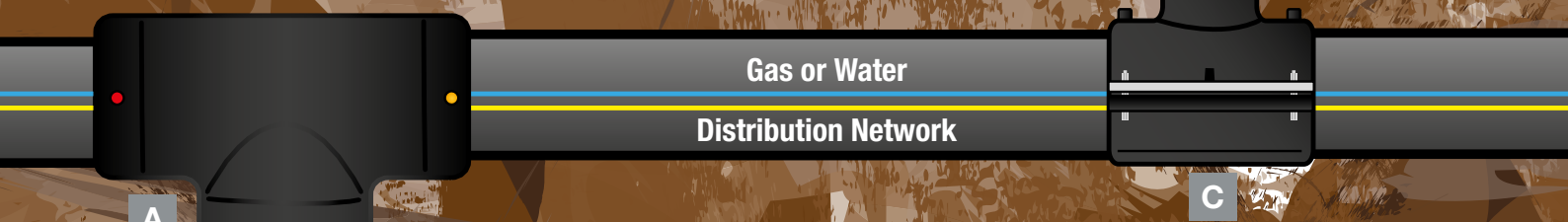
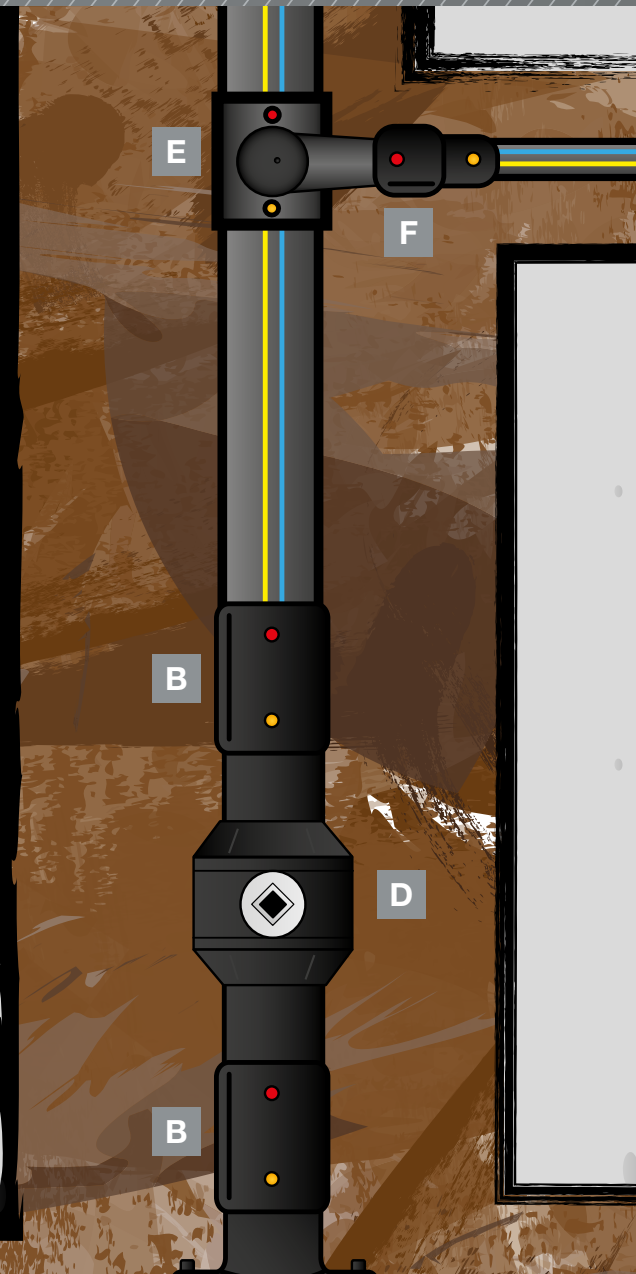
**D**  
**Certus PE Ball Valve**  
Sizes 20 - 180mm



**E**  
**Multiseal tapping tee**  
*Delivering security, safety and speed at the point of installation*  
Stackload or underclamp  
Sizes range from 40 – 400/450mm  
20, 25, 32, 40, 50 and 63mm outlets



**F**  
**Electrofusion integral flow limiter**  
*Fits into electrofusion coupler or reducer*  
Size range; 32x20, 32x25, 32x32



**SBOX Max - Electrofusion**  
*The SBOX Max electrofusion welding machine gives you functionality, reliability and is capable of welding electrofusion fittings for gas, water and other pressure pipe applications from 20 - 630mm*



**Gator - Automatic Butt Fusion**  
*The Gator range of automatic butt fusion machines have been designed and developed to be used on gas and water pressure polyethylene pipes for distribution networks. Various options available to weld pipe in the size range 63 - 400mm*

# ASSOCIATED PRODUCTS

## PRODUCT SELECTOR GUIDE

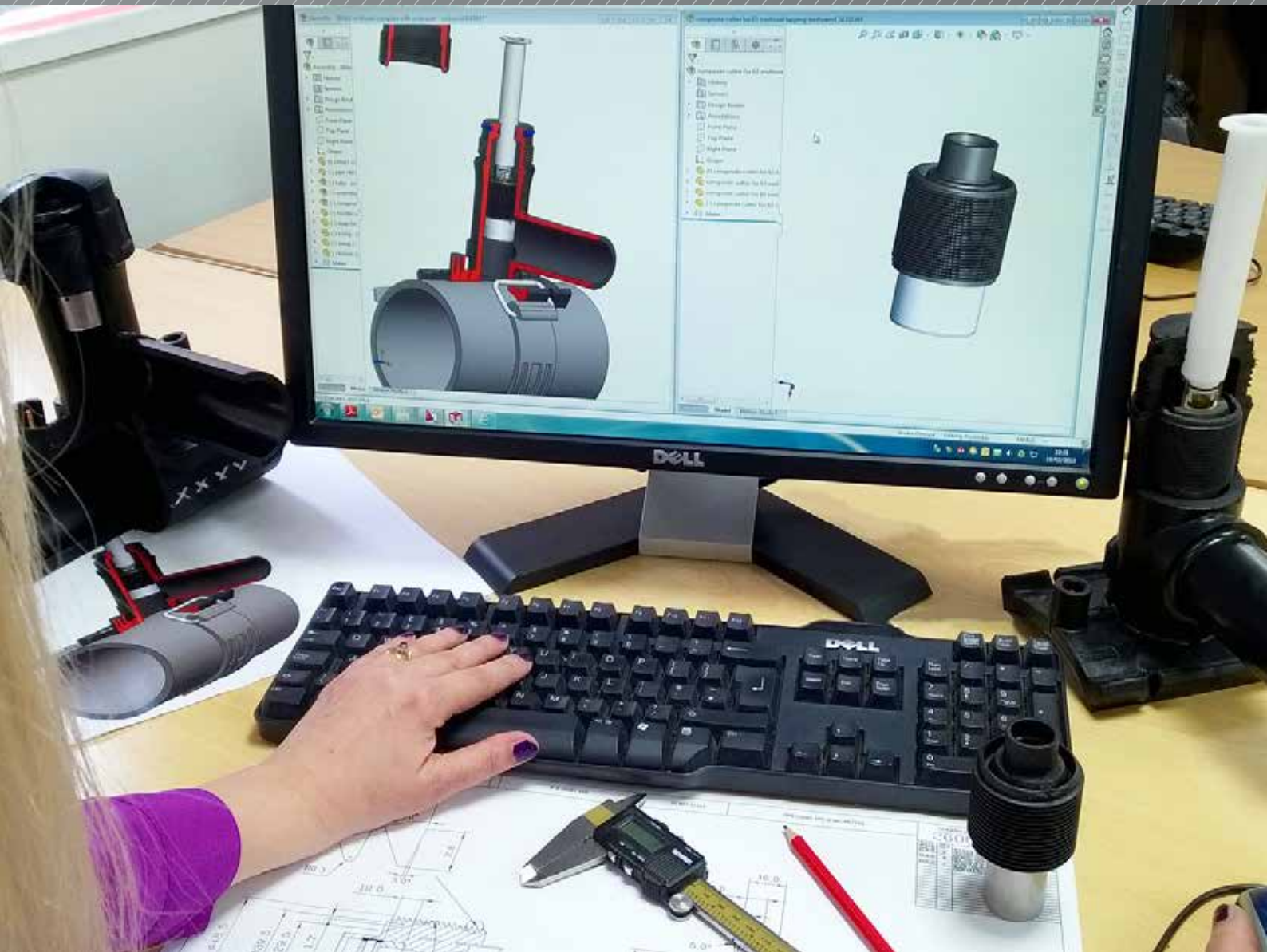
Fusion Group are a leading innovator, manufacturer and supplier of products, services and solutions for gas and water polyethylene pipeline systems. For the full range visit our website [www.fusiongroup.com](http://www.fusiongroup.com)

	<p><b>COUPLER</b> PE100 Water PN16 Gas 10 Bar d20-400mm</p>		<p><b>END CAP</b> PE100 Water PN16 Gas 10 Bar d20-250</p> <p>Long spigot end caps available above 250mm</p>		<p><b>REDUCER</b> PE100 Water PN16 Gas 10 Bar d25x20-180x125</p> <p>Long spigot reducers available above 180mm</p>
	<p><b>CERTUS PE BALL VALVES</b> PE100 SDR 11 (SDR 17/17.6 available upon request) d20-180</p>		<p><b>ELECTROFUSION INTEGRAL FLOW LIMITOR</b> Fits into electrofusion coupler or reducer Range 0.69 Bar to 7 Bar d32x20, 32x25 and 32x32</p>		<p><b>SURFACE BOX</b> Grants access to lower buried valves at all times.</p> <p>Various options available</p>
	<p><b>SBOX MAX – ELECTROFUSION</b> Welds Fusamatic fittings from</p> <p>d20 – 630mm</p>		<p><b>SBOX LITE 220V – ELECTROFUSION</b> Welds Fusamatic fittings from</p> <p>d20-125mm</p>		<p><b>UNIPREP SCRAPER</b> To prepare pipe ends prior to electrofusion</p> <p>63-250mm 90-400mm 125-500mm 450-710mm</p>
	<p><b>MULTI SCRAPE</b> To prepare pipe ends prior to electrofusion Designed with coiled pipe in mind</p> <p>20-63mm</p>		<p><b>HAND SCRAPER</b> Used for scraping pipe areas prior to electrofusion</p> <p>Blade size 1.5" Blade size 2.5"</p>		<p><b>MINI CLAMPS</b> For alignment and restraint of pipe and electrofusion fittings for service connections</p> <p>20, 25 and 32mm</p>
	<p><b>TOP LOAD CLAMP</b> Strap clamp for use on top loaded saddles</p> <p>63-500mm</p>		<p><b>TEST CAPS</b> A range of reusable caps for the pressure testing of service/tapping tee fittings</p> <p>32 and 63mm</p>		<p><b>CUTTER KEY</b> Drive key tools for service/tapping tee integral cutters with 12mm hexagonal drives</p>
	<p><b>SECATEURS</b> Secateurs for cutting polyethylene pipe</p> <p>16-42mm 20-63mm</p>		<p><b>GUILLOTINE CUTTER</b> For cutting polyethylene pipe</p> <p>63-125mm 63-225mm 63-315mm</p>	<p><b>Global PE Product Offer</b></p> <p>For further information on the Fusion Group product range; download the Global PE Product Offer brochure from our website <a href="http://www.fusiongroup.com">www.fusiongroup.com</a></p> 	



# BIM AND CAD MODELS

## 2D AND 3D DRAWING DATA



## Direct access to Fusion's BIM and CAD models at [www.fusiongroup.com](http://www.fusiongroup.com)

Visit the Fusion Group website - [www.fusiongroup.com](http://www.fusiongroup.com) for direct access to Fusion's BIM and CAD models, in .dxf, .igs and .step file formats.

The models provide customers with the ability to transfer 2D and 3D drawing data between a variety of CAD and BIM infrastructure design systems.





## Delivery Codes

Products are categorised into 3 delivery codes which are based on our delivery commitments, these are as follows:

- A = Available ex-stock, or up to 6 weeks
- B = Up to 6 weeks
- C = Upon enquiry

The above lead times are provided as an indication only and are manufacturing replenishment times in the event of a stock-out.

If your request is of an urgent nature, please email [sales@fusiongroup.com](mailto:sales@fusiongroup.com) or telephone +44(0)1246 268666 for further details regarding delivery commitments.



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