

# ABANDONMENT PLUGS

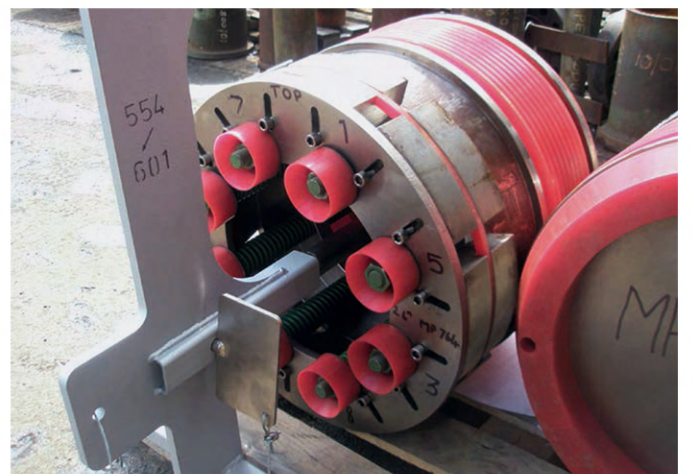
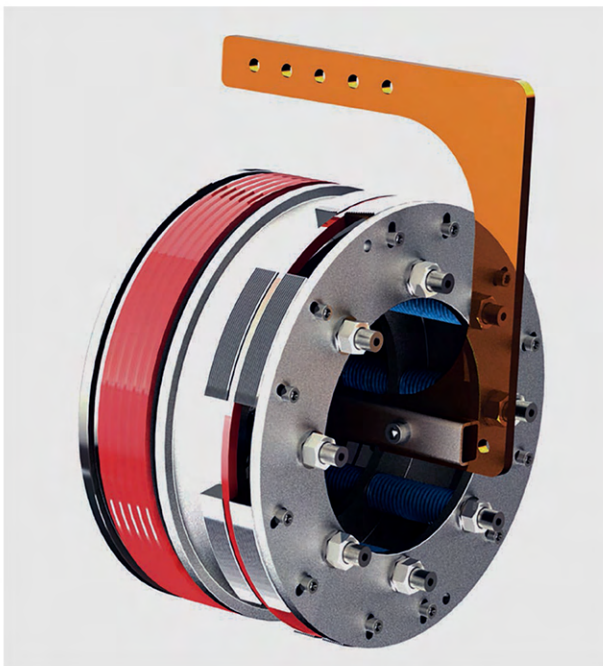
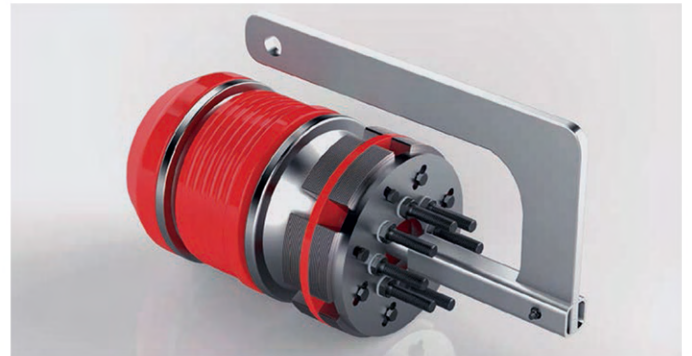
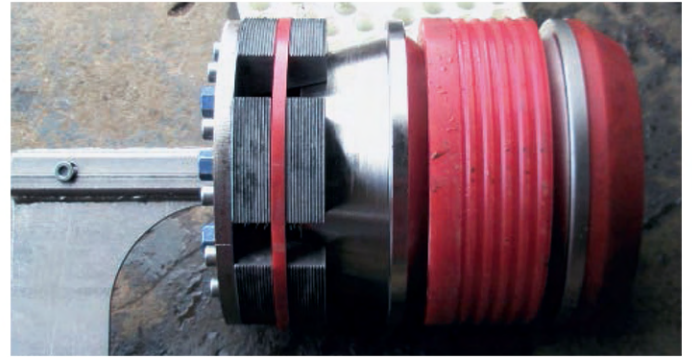
## Features

Abandonment plug was developed as a long term isolation and decommissioning tool to provide reliable and simple isolation of pipework systems of pipelines for the oil, gas and petrochemical infrastructure.

Abandonment plugs are commonly used during long term isolation and/or decommissioning of pipelines. Abandonment plugs can be designed for extended life, typically from 15 – 30 years. The abandonment plug is based on the range of high-pressure plugs, which incorporates separate seal and pressure / load retention elements. The innovative design ensures generous clearance so inserting the tool is easy and the tool can simply accommodate internal obstructions including ovality and weld bead penetration. The fail-safe design ensures that any load on the plug end is diverted circumferentially into the pipe wall of the host pipework.

Hardened jaw materials, gripping design, surface area and speed of actuation are all critical to the successful installation and energising of the abandonment plugs. Technology continually moves forward and the use of more exotic, harder and more corrosion resistant pipeline materials has required similar development in jaw technology.

Gas tightness is ensured through the high quality polyurethane seal technology and a range of high temperature and ultra-low temperature seals are available depending upon client specification and geographical location.



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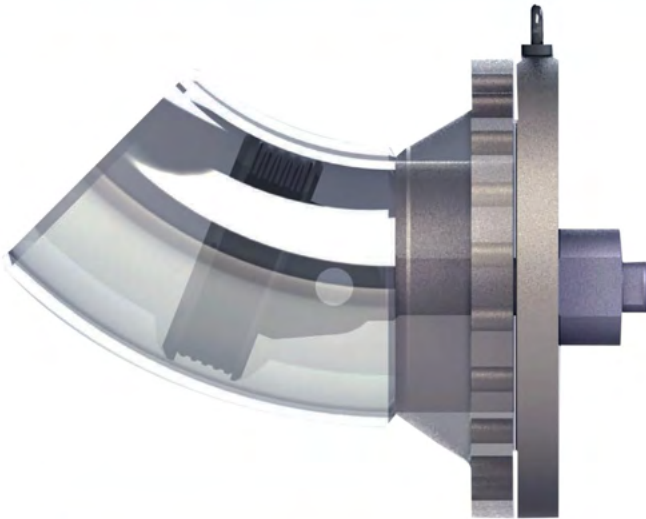


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# WELD TESTERS

Flange and Internal for Hydrostatic Testing



## Operational Benefits

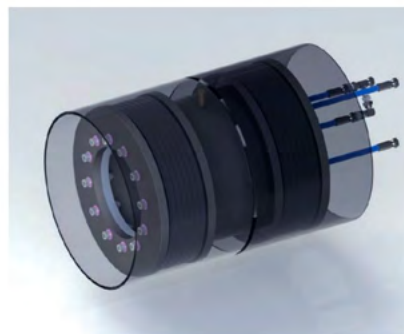
- Products developed at client request, specified and approved by all UKOOA operators and contractors
- Reduced plant operation downtime and consequent revenue stream constraints
- Reduced modification labour time
- Accurate modification time scale as the overall scope of work is minimised
- No requirement to flood and subsequently dewater the whole pipe work system minimising time and consequent potential freeze damage
- No requirement for full system hydro-testing of 'mature' pipe work which can result in additional leakage problems
- Fully certified client training on-site or factory training programmes
- All flange weld testers supplied complete with current hydro-test certificate and operational instructions
- On site technicians available for training, technical support or tool installation and operation dependent upon client requirement
- polyurethane grades are available upon technical specification
- Robust design and construction ensures many years of trouble free operation in the most difficult operational environments
- Years of continuous product development have ensured trouble-free chimney venting designs to ensure operation in any required pipe work orientation including vertical, horizontal or inclined
- Note: Site based Risk Assessments should always be conducted and remain the responsibility of the hiring client together with the responsibility to ensure that operators are trained in operation of the tools

## Features

Flange weld testers provide accurate localized pressure testing of new flange welds. This is of particular benefit when pipeline modifications and old pipe work repairs are conducted as they purely test the new weld and not the whole system. Pressure testing of an old line can lead to confusing results given the potential for other leak paths, particularly on lots of other fittings. Special angled testers are also available for flanges fitted on bends



- Simple installation and operation simply explained within the Operation Manual
- Easily installed and activated in a few minutes even in the larger sizes, designed with simple handling lugs for safe and easy handling
- Designed with sensible radial clearance to cope with potential in-sertion clearance operational problems such as excessive weld penetration, ovality or mineral deposits (please note: porous deposits will effect annulus pressurisation and may necessitate cleaning back to the steel substrate)
- Specialised tools can accommodate elbow, tee or extended actuation. Solid or inflatable options dependent upon rating and application
- Suitable for most test mediums of gas or liquid depending upon application
- High performance composite polyurethane seals ensure optimum expansion or relaxation. Additional ultra-low temperature composite polyurethane grades are available upon technical specification
- Robust design and construction ensures many years of trouble free operation in the most difficult operational environments
- Years of continuous product development have ensured trouble-free chimney venting designs to ensure operation in any required pipe work orientation including vertical, horizontal or inclined



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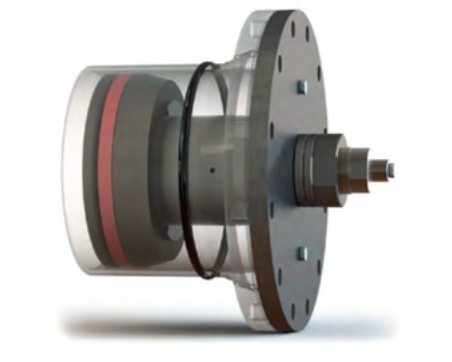
# WELD TESTERS

Flange and Internal for Hydrostatic Testing

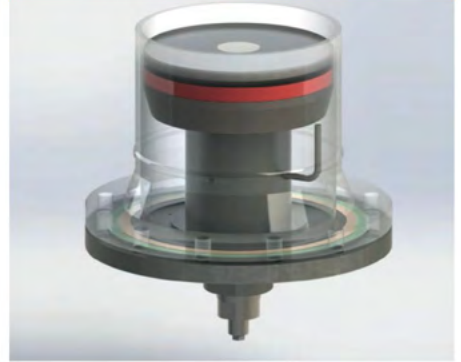
Vertical Orientation



Horizontal Orientation



Vertical Upside Down Orientation



## Orientation and Location

Orientation and location of the weld tester must be taken into consideration to ensure that all air is effectively bled from the cavity area. Venting chimneys are available to cover any test orientation required.

All testers are supplied with full operation instructions and training on site. Our design engineers are also available for advice and technical support.

Internal, sometimes called in line weld testers, are also available from our extensive hire fleet in sizes to cover all schedules from 1/2" to 36".

Designed for butt weld testing they can also be used for valve testing and a number of other options, such as tees, in association with flange weld testers or high pressure plugs.

Our designers are available to discuss potential applications or requirements and advice from their extensive experience.

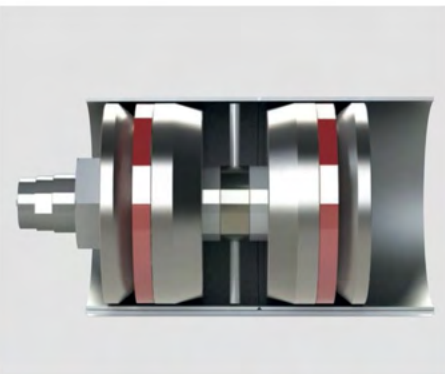
All weld testing equipment and plugs are available in mechanical and hydraulic options for tethered remote operation depending upon size, location and actuation requirements.

All products are supplied complete with full factory acceptance pressure test certificates which can be third party witnessed if required.

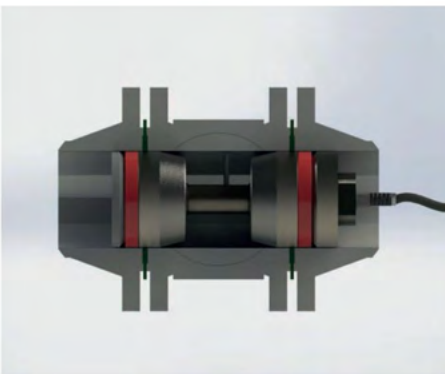
Internal weld testers can be used in a number of options and orientations for testing butt welds to line pipe. Mechanical and hydraulic options provide for local or remote actuation through extended hoses.

Internal weld testers can also be used to test the effective sealing of flange mounted ball valves. Dependent upon application, testers can be purpose manufactured to provide a specific length between the connectors.

Flange weld testing can be achieved by either using the bespoke flange weld tester or by using an internal weld tester as illustrated. The weld is again located between the two connectors and the weld tested by pressure testing the cavity between the two energised seals.



Pressure Testing Butt Weld



Pressure Testing Valve



Pressure testing Flange Weld

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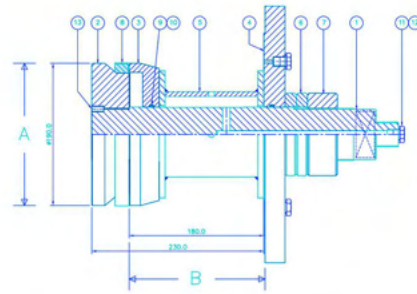
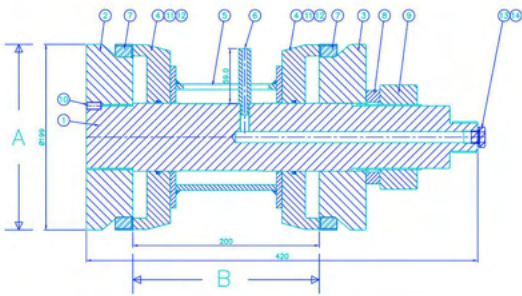


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# WELD TESTERS

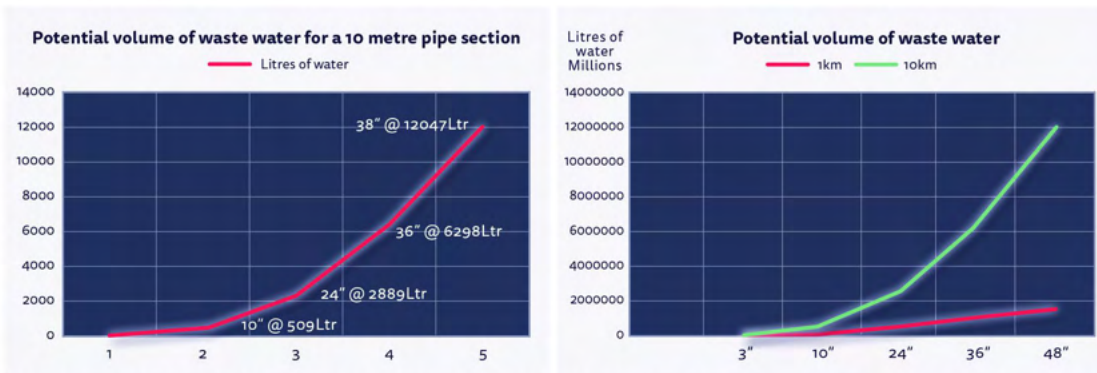
Flange and Internal for Hydrostatic Testing



| Internal weld tester parts list (mechanical) |                 |      |                | Flange weld tester parts list (mechanical) |               |      |                |
|--|-----------------|------|----------------|--|---------------|------|----------------|
| Part   | Description     | Part | Description    | Part                                       | Description   | Part | Description    |
| 1  | Body            | 8    | Spacer nut     | 1  | Body          | 7    | Nut            |
| 2/3  | Front/rear hubs | 9    | Nut            | 2  | Hub           | 8    | Posi-seal™     |
| 4  | Seal actuator   | 10   | Vent Chimney   | 3  | Seal Expander | 9    | 'O' ring       |
| 5  | Spacer          | 11   | 'O' ring       | 4  | ANSI flange   | 10   | Anti extrusion |
| 6  | Chimney         | 12   | Anti extrusion | 5  | Spacer        | 11   | Hex head plug  |
| 7  | Posi-seal™      | 13   | Hex head plug  | 6  | Nut spacer    | 13   | Grub screw     |

| General dimensions | Dependant on schedule A | Seal distance B | Weight CL150 | General dimensions | Dependant on schedule A | Seal distance B | Weight CL150 |
|--------------------|-------------------------|-----------------|--------------|--------------------|-------------------------|-----------------|--------------|
| 1"                 | 33.4mm                  | 70mm            | 1.2kg        | 1"                 | 33.4mm                  | 70mm            | 1.5kg        |
| 2"                 | 60.3mm                  | 80mm            | 3kg          | 2"                 | 60.3mm                  | 80mm            | 4kg          |
| 3"                 | 88.9mm                  | 115mm           | 6kg          | 3"                 | 88.9mm                  | 115mm           | 9.5kg        |
| 4"                 | 114.3mm                 | 145mm           | 8kg          | 4"                 | 114.3mm                 | 145mm           | 13kg         |
| 6"                 | 168.3mm                 | 175mm           | 20kg         | 6"                 | 168.3mm                 | 175mm           | 26kg         |
| 8"                 | 219.1mm                 | 200mm           | 40kg         | 8"                 | 219.1mm                 | 200mm           | 54kg         |
| 10"                | 273.1mm                 | 200mm           | 65kg         | 10"                | 273.1mm                 | 200mm           | 88kg         |
| 12"                | 323.9mm                 | 200mm           | 95kg         | 12"                | 323.9mm                 | 200mm           | 115kg        |

\*Larger sizes up to 36" available upon request and availability



Flange weld testers significantly reduce polluted waste water production and helps to reduce the environmental impact of necessary pipe line repair and modification. For example, a 1km length of 24" pipe requires 228,000 litres of water to hydro-test compared to 140 litres for the product STM 24" flange weld tester

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# HIGH PRESSURE (HP) PLUG



Abandonment plug



Hydraulic HP plug



Double block HP plug



Mechanical plug

## Features

High pressure plugs are commonly used during maintenance and modification of piping and process equipment including providing hydrostatic pressure testing without the need for flanges/blind flanges. Operators can save time, materials and labour and consequently dramatically reduce cost and time using the patented high pressure plug designs which can be installed and energised in a matter of minutes. The innovative design ensures generous clearance so inserting the tool is easy and the tool can simply accommodate internal obstructions including ovality and weld bead penetration. The fail safe design ensures that any load on the plug end is diverted circumferentially into the wall of the host pipework or vessel.

Hardened jaw materials, gripping design, surface area and speed of actuation are all critical to the successful installation and energising of high pressure pipeline plugs today. Technology continually moves forward and the use of more exotic, harder and more corrosion resistant pipeline materials has required similar development in jaw technology.

Gas tightness is ensured through the high quality polyurethane seal technology and a range of high temperature and ultra-low temperature seals are available depending upon client specification and geographical location.

The proven high pressure plug design ensures that every orientation of pipework is easily accommodated and simply installed with the minimum of time and without the need for special tools. Typically tools from 1/2" and up to 30" are available for pressures up to Class 2500 in mechanical and hydraulic options.

## Benefits

- Products developed at client request, specified and approved by all UKOOA operators and contractors.
- Reduced plant operation downtime and consequent revenue stream constraints.
- Reduced modification labour time.
- Accurate modification time scale as the overall scope of work is minimised.
- No requirement for full system hydro-testing of 'mature' pipe work which can result in additional leakage problems.
- Fully certified client training on site or factory training programmes.
- On site technicians available for training, technical support or tool installation and operation dependent upon client requirement.
- Note: Site based Risk Assessments should always be conducted and remain the responsibility of the hiring client together with the responsibility to ensure that operators are trained in operation of the tools.
- Simple installation and operation simply explained within the operation manual.
- Easily installed and activated in a few minutes even in the larger sizes, designed with simple handling lugs for safe and easy handling.
- Typically mechanically operated up to 12" and hydraulically operated on sizes above 12" although bespoke actuation can be accommodated to client specification.
- Using the innovative and easy to operate high pressure plugs means that end caps do on need to be welded on the pipes to conduct hydro testing. This saves time and cost. No need to source and buy end caps which reduces cost. No need to weld on end caps which reduces time and cost. No need to cut off end caps which reduces time and cost. No need to renew pipe end preparation for welding which reduces time and cost. A simple, easy and readily available solution which reduces time and cost.

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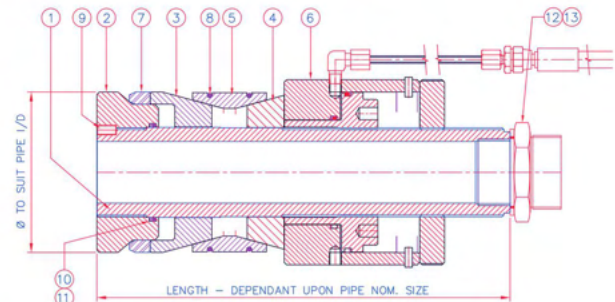
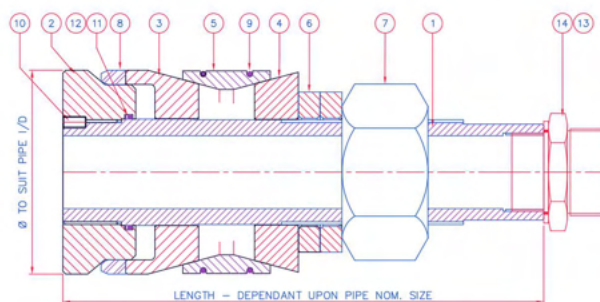
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# HIGH PRESSURE (HP) PLUG



High-pressure plugs can be used to cap open-ended pipes, pipe spools, and piping systems and remove the need to fit flanges/ blind flanges which is the traditional way to hydro-statically test and eliminates the need for hot work and consequent permits. HP plugs can also be used as pig launching facilities by pre-loading pigs directly into the pipe, fitting the plug, and then "launching" the pigs through the central port as required.



| Item No. | Description             |
|----------|-------------------------|
| 1        | Body                    |
| 2        | Hub                     |
| 3        | Seal expander           |
| 4        | Expander                |
| 5        | Vice jaw                |
| 6        | Nut spacer              |
| 7        | Energising hex. Nut     |
| 8        | Posi-SealTM             |
| 9        | Spring belt             |
| 10       | Grub screw              |
| 11       | "O" ring                |
| 12       | Anti-extrusion ring     |
| 13/14    | M-M adaptor/bonded seal |

| Item No. | Description    |
|----------|----------------|
| 1        | Body           |
| 2        | Hub            |
| 3        | Seal expander  |
| 4        | Expander       |
| 5        | Vice Jaw       |
| 6        | Hydraulic nut  |
| 7        | Posi-sealTM    |
| 8        | Spring belt    |
| 9        | Grub screw     |
| 10       | "O" ring       |
| 11       | Anti-extrusion |
| 12       | M-M adaptor    |
| 13       | Bonded seal    |

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# POSI-SEAL STOPPERS

Low Pressure [LP] Inflatable Pipe Plug

## Specifications

- Fabricated steel body; inflatable elastomeric seamless tyre; two standard widths
- Seals in circular sections with limited tolerance in diametric variation, ovality or irregularities
- Suitable for pressures to 10 BAR when the body is adequately supported or strutted
- Plug is inflated hydraulically or pneumatically through integral Schrader type valve by hand or foot pump

### Special adaptations available

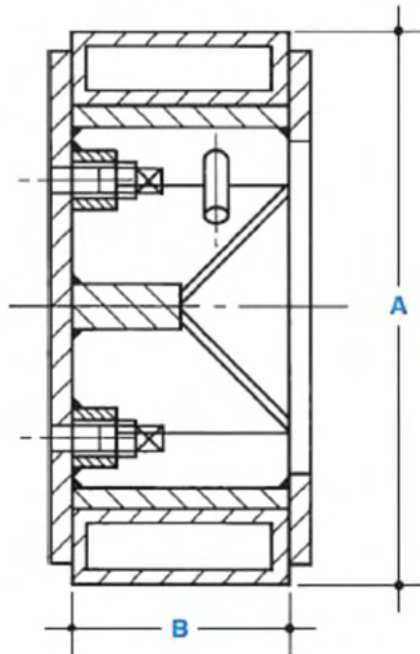
- Multi-tyre arrangements for enhanced sealing area
- Split construction for access through restricted opening
- Aluminum body
- Vent and/or drain plug connections
- Castor/wheel mountings and extended connections for remote installation
- Special sizes up to 4 metres diameter



Low Pressure [LP] Inflatable Pipe Plug

## Product Guide

- The posi-seal low pressure pipe plug is designed for the temporary sealing-off of pipelines, drains, sewers and vessels
- Essentially a gas seal plug for temporary isolation duties whilst inspection and repair work is being undertaken
- May be used for joint testing when linked in tandem
- Easily installed simple to use



### General Dimensions

| Size | A   | B   | Size | A    | B   |
|------|-----|-----|------|------|-----|
| 4"   | 100 | 75  | 26"  | 650  | 100 |
| 5"   | 125 | 75  | 28"  | 700  | 100 |
| 6"   | 150 | 75  | 30"  | 750  | 100 |
| 8"   | 200 | 75  | 32"  | 800  | 100 |
| 10"  | 250 | 75  | 34"  | 850  | 100 |
| 12"  | 300 | 75  | 36"  | 900  | 100 |
| 14"  | 350 | 75  | 38"  | 950  | 100 |
| 16"  | 400 | 100 | 40"  | 1000 | 100 |
| 18"  | 450 | 100 | 42"  | 1050 | 100 |
| 20"  | 500 | 100 | 44"  | 1100 | 100 |
| 24"  | 600 | 100 | 48"  | 1200 | 100 |

Dimensions in mm – specials available

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# DUAL TOOL™

Twin -Tyred Isolation Plug



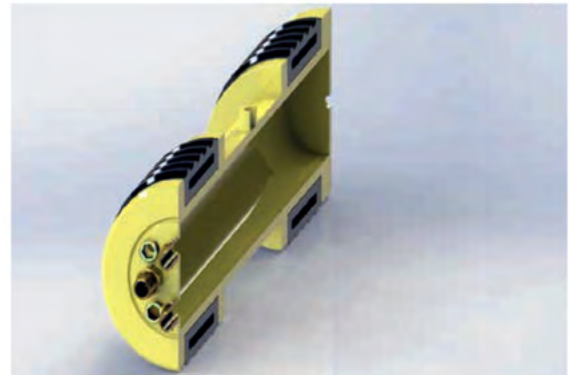
The patented DUAL TOOL™ was originally developed at the request of a major UK refinery as a fail-safe superior tool to provide a hydrocarbon-free isolation whilst conducting hot work modifications to plant pipework and then subsequently to pressure test the new weld – two tools in one, hence the term DUAL TOOL™. At the time of development traditional civil drain type squeeze/compression plugs were widely and unsafely used and specified for this purpose.

Building on the tried, tested and patented technology tyre seals, the concept incorporates an annulus, approximately 6" (150mm) long between the two inflatable Posi seal™ tyres. The provision of this annulus provides a "double block and bleed" feature to be incorporated to prevent any residual gasses from passing the DUAL TOOL™ and coming into the welding area.

Since the introduction of this innovative tool into the market over 10 years ago, it has proved to be a great success. Another engineering solution that has been developed and quickly adopted and specified by operators and contractors in the UK and Europe but is now accepted around the world. The unique polyurethane Posi-seal™ tyres are independently inflated to a pressure of 15 barg to create double isolation before the annulus is filled with a suitable medium and pressurised to 5 barg to prove the integrity of the tyre seals. The DUAL TOOL™ is also designed with a central vent port through which potential gases can be safely vented or analysed. Once energised the tool has three very effective seals and is also designed to withstand a differential pressure of 5 barg.

The conceptual design around the DUAL TOOL™ is to provide isolation whilst the line pipe hot work is conducted and then to pressure test the new weld once complete. The tool is inserted 500mm from the welding hot work and energised as described. The distance from the weld is necessary to prevent damage to the tyres due to potential heat transfer through the line pipe during welding.

The standard DUAL TOOL™ is designed to operate and seal within schedules from Xtra Strong [XS] to Standard [Std] in any given pipe size. In addition to the isolation of the pipe the tool can also be subsequently used to pressure test the weld using the centre cavity up to Class 150 using the stainless steel hoses, valves and gauges which are supplied with the unit. The cost and time saving benefits of isolation and subsequent pressure testing means that the DUAL TOOL™ has significantly improved operational safety and drastically reduced installation and operational down time during shutdowns.



Internal view of Dual Tool™

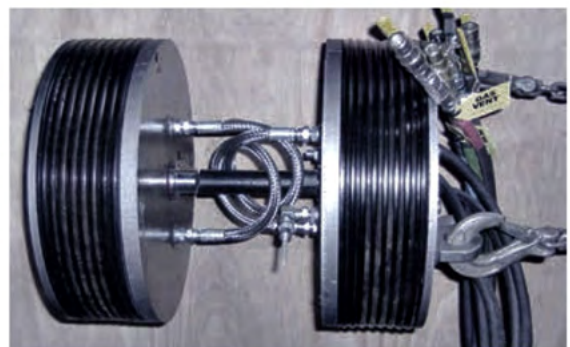


## Specifications

- Independently inflated Posi-seal™ tyres
- Designed to withstand 5 barg differential pressure
- Through vent port for up-stream pressure monitoring and/or safe venting
- Three effective barriers
- Front and rear tyre inflation pressure 15 barg
- Internal annulus can be pressurised to 30barg

## Benefits

- Easily installed and operated
- No special tools required
- Accommodates a wide range of pipe schedules
- Design tolerance accommodates ovality and excessive weld beads
- Temporary isolation protection for hot work repairs
- Conducts isolation and weld testing combined
- Gauges and valves fitted as standard



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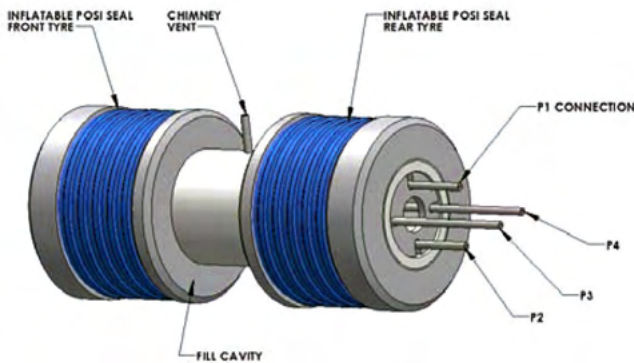
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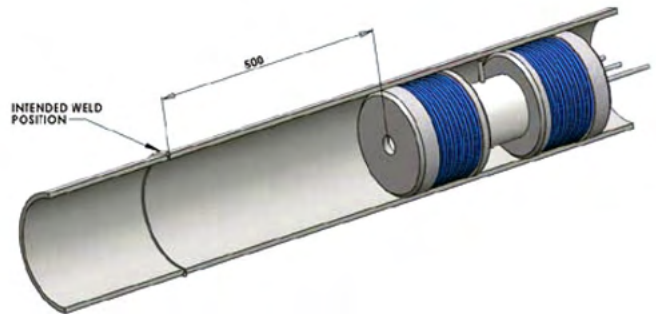


# DUAL TOOL™

Twin -Tyred Isolation Plug

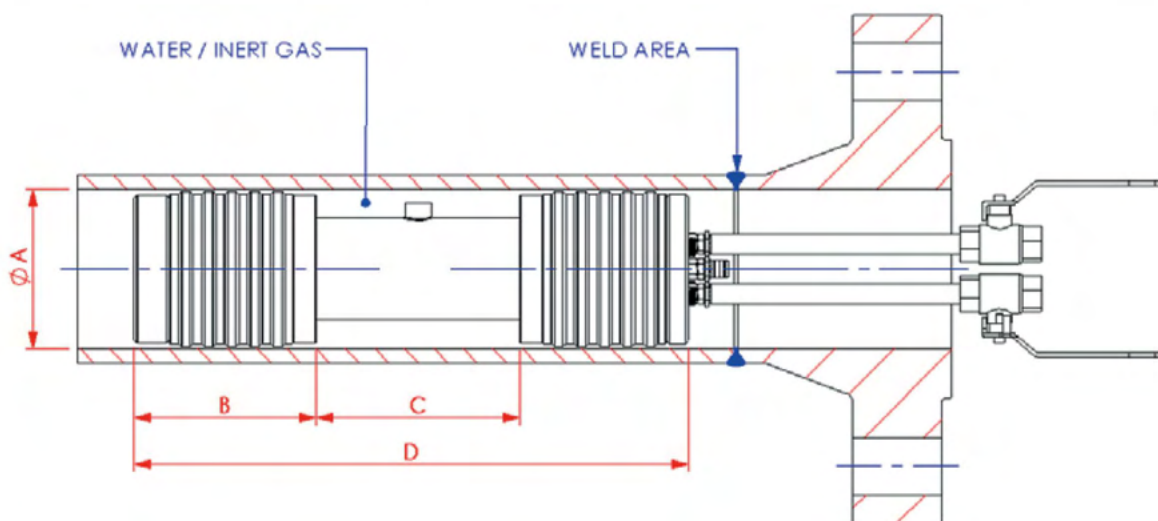


A MINIMUM GAP OF 500mm REQUIRED TO PREVENT SEAL DAMAGE WHEN WELDING



| Nominal Size | Pipe Schedule | DUAL TOOL™ dimensions |             |             |             |             |
|--------------|---------------|-----------------------|-------------|-------------|-------------|-------------|
|              |               | Dimension A           | Dimension B | Dimension C | Dimension D | Weight (kg) |
| 2"           | Sch 40        | 47mm                  | 75mm        | 75mm        | 280mm       | 5.5kg       |
| 3"           | Sch 40        | 70mm                  | 75mm        | 75mm        | 250mm       | 10.5kg      |
| 4"           | Sch 40        | 95mm                  | 105mm       | 105mm       | 338mm       | 11.5kg      |
| 6"           | Sch 40        | 140mm                 | 100mm       | 100mm       | 305mm       | 22.5kg      |
| 8"           | Sch 40        | 188mm                 | 120mm       | 120mm       | 325mm       | 32.5KG      |
| 10"          | Sch 40        | 230mm                 | 120mm       | 120mm       | 330mm       | 40.0kg      |
| 12"          | Sch 40        | 290mm                 | 190mm       | 190mm       | 405mm       | 65.0kg      |

\*Sizes up to 36" are available for sale or hire as are special extended tools or lightweight flexible DUAL TOOL™ options. We offer a full design, manufacture, factory acceptance test, and operate to client specifications. All tools are provided with operational instructions and test certificates.



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