

# Crane Malleable Iron Pipe Fittings



**When you see these signs - you're safe**

**Suitable for Use with Drinking Water**



The British Standards Institution Kitemark means that the fitting is a Water Byelaws Scheme approved product suitable for use with drinking water.



**Taper Thread fittings**



This sign means that the fitting is manufactured in the UK by Crane and has a taper thread. This ensures the fitting engages with the whole thread of the pipe which is also tapered giving a stronger, more reliable joint without the need for hemp filler.

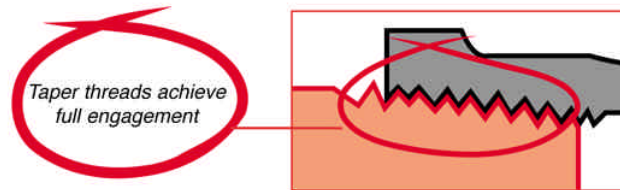
*Crane Fittings carry the signs to assure you of the best of British manufacture.*

## Crane Taper Thread fittings provide the most effective joints

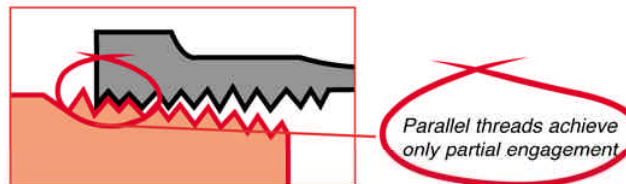
- Full engagement the whole thread length - reliable strong joints
- No need for hemp filler - faster installation, lower costs
- High torques can be applied without risk of damaging the fitting
- Freedom to break and re-make joints
- Professional joint appearance

Pipe threads on Crane pipe fittings are British Standard taper to BS 21 and ISO 7 unless otherwise stated.

**Taper Thread**

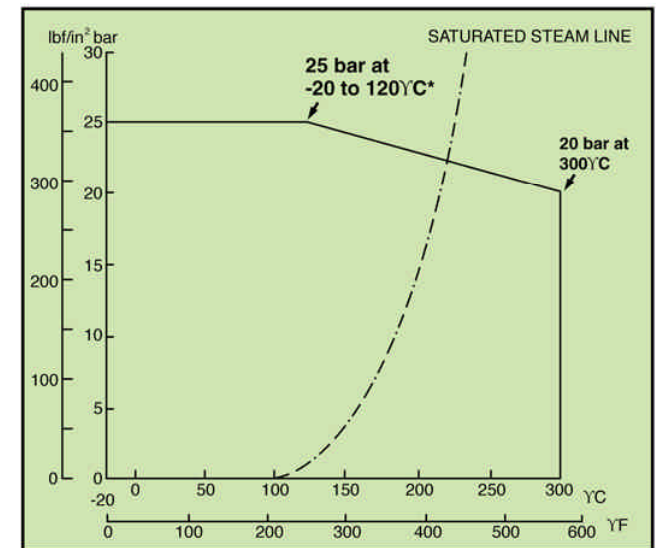


**Parallel Thread**



## Pressure/temperature ratings

Crane malleable iron fittings are suitable for use at the rating shown in the graph below. This is with the exception of certain unions but such use is dependent on the suitability of the connecting pipe material, the threaded joint and any thread sealants used. Due consideration should also be given to any application codes of practice. Pressures stated are maximum non-shock gauge.



\* Hot dip zinc coated (galvanised) fittings should not be used below -10°C (14°F).

**CRANE** FLUID SYSTEMS

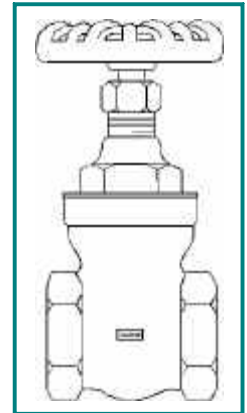
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 A Crane Co company.

<b>Product Catalogue : Valves</b> Click on a hyperlink to go to that section	<b>Specification Guides &amp; Charts</b> Click on a hyperlink to go to that section
<a href="#">Go Back to Front Page</a>	<a href="#">H&amp;V Valves Specification Chart</a>
<a href="#">Gate Valves</a>	<a href="#">Balancing Valves Specification Chart</a>
<a href="#">Globe Valves</a>	<a href="#">Pressure / Temperature Chart (Class Rated Valves)</a>
<a href="#">Check Valves</a>	<a href="#">Pressure / Temperature Chart (PN up to 32 Rated Valves)</a>
<a href="#">Ball Valves</a>	<a href="#">Pressure / Temperature Chart (PN64 Rated Valves)</a>
<a href="#">Butterfly Valves</a>	<a href="#">Pressure / Temperature Chart (Iron Valves)</a>
<a href="#">Static Balancing Valves</a>	
<a href="#">Automatic Balancing Valves</a>	<b>Other Valve Documentation</b> Click on a hyperlink to go to that section
<a href="#">Strainers</a>	<a href="#">Balancing Valve Flow Charts</a>
<a href="#">Radiator Valves</a>	<a href="#">Operation and Maintenance Instructions</a>
<a href="#">Draining Products</a>	<a href="#">Product Certification - Valves</a>
<a href="#">Needle Valves</a>	
<h2>Gate Valves</h2>	

Crane gate valves offer the ultimate in dependable service wherever minimum pressure drop is important. They serve as efficient stop valves with fluid flow in either direction.

The straight through design offers little resistance to flow and reduces pressure drop to a minimum. A gate-like disk – actuated by a stem screw and handwheel – moves up and down at right angles to the path of flow, and seats against two seat faces to shut off flow.

Gate valves are not recommended for throttling since the control characteristic is not appropriate and subsequent damage due to erosion may prevent the valve providing an effective shut off.



### Product Range

Figure Number	Name	Material	Pressure Rating
<a href="#">33XU-F</a>	33XU-F Gate Valve	Carbon Steel	Class 300
<a href="#">47XU-F</a>	47XU-F Gate Valve	Carbon Steel	Class 150
<a href="#">D151</a>	D151 Gate Valve	Bronze	PN20
<a href="#">D151A</a>	D151A Gate Valve	DZR	PN20
<a href="#">D151X</a>	D151X Gate Valve	Bronze	PN25
<a href="#">D155C</a>	D155C Compression Ended Gate Valve	Bronze	PN16
<a href="#">D156</a>	D156 Gate Valve	Brass	PN16
<a href="#">D159</a>	D159 Gate Valve	Bronze	PN32
<a href="#">D160</a>	D160 Gate Valve	Bronze	Class 100
<a href="#">D161</a>	D161 Gate Valve	Bronze	Class 150
<a href="#">D162</a>	D162 Gate Valve	Bronze	Class 150
<a href="#">D166</a>	D166 Gate Valve	Bronze	PN32
<a href="#">D180</a>	D180 Gate Valve	Bronze	PN32
<a href="#">D185</a>	D185 Gate Valve	Bronze	PN64
<a href="#">D235</a>	D235 Gate Valve (1/2" - 2")	Bronze	PN32

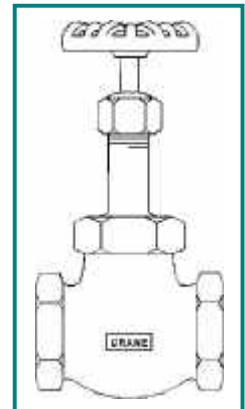
<a href="#">D235Large</a>	D235 Gate Valve (2.1/2" and 3")	Bronze	PN32
<a href="#">D237</a>	D237 Gate Valve (1/2" to 2")	Bronze	PN20
<a href="#">D237A</a>	D237A DZR Gate Valve	DZR	PN20
<a href="#">D237Large</a>	D237 Gate Valve (2.1/2" and 3")	Bronze	PN20
<a href="#">D255C</a>	D255C Compression Ended Gate Valve	Bronze	PN16
<a href="#">DM160</a>	DM160 Gate Valve	Bronze	PN16
<a href="#">DM161</a>	DM161 Gate Valve	Bronze	PN25
<a href="#">F174</a>	F174 Gate Valve	Malleable Iron	PN16
<a href="#">F179</a>	F179 Gate Valve	Malleable Iron	PN16
<a href="#">F182</a>	F182 Gate Valve	Malleable Iron	PN16
<a href="#">F183</a>	F183 Gate Valve	Malleable Iron	Class 125
<a href="#">F52</a>	F52 Gate Valve	Cast Iron	Class 100
<a href="#">F53</a>	F53 Gate Valve	Cast Iron	Class 125
<a href="#">F54</a>	F54 Gate Valve	Cast Iron	Class 100
<a href="#">F58</a>	F58 Gate Valve	Cast Iron	Class 125
<a href="#">F59</a>	F59 Gate Valve	Cast Iron	Class 125
<a href="#">F84</a>	F84 Gate Valve	Cast Iron	Class 125
<a href="#">FM124</a>	FM124 Gate Valve	Ductile Iron	PN16
<a href="#">FM125</a>	FM125 Gate Valve	Ductile Iron	PN16
<a href="#">FM52</a>	FM52 Gate Valve	Cast Iron	PN6
<a href="#">FM57</a>	FM57 Gate Valve	Cast Iron	PN10
<a href="#">FM63</a>	FM63 Gate Valve (50mm to 100mm)	Cast Iron	PN16
<a href="#">FM63 Large</a>	FM63 Gate Valve (125mm to 300mm)	Cast Iron	PN16
<a href="#">FM82</a>	FM82 Gate Valve	Cast Iron	PN16

[\(Jump to Top\)](#)

## Globe Valves

Crane globe valves are highly efficient for throttling service because seat and disk designs provide flow characteristics with proportionate relationships between valve lift and flow rate. This assures accurate flow control/regulation.

Globe valve bodies are normally of spherical shape, ensuring maximum strength against line pressures and pipeline strains. Wide faced hexagon ends on threaded valves provide a firm wrench grip which prevents damage to the valve.



### **Product Range**

Figure Number	Name	Material	Pressure Rating
<a href="#">143XU</a>	143XU Globe Valve	Carbon Steel	Class 150
<a href="#">151XU</a>	151XU Globe Valve	Carbon Steel	Class 300
<a href="#">D10</a>	D10 Globe Valve	Bronze	Class 150
<a href="#">D14</a>	D14 Globe Valve	Bronze	PN32
<a href="#">D15</a>	D15 Globe Valve	Bronze	PN32
<a href="#">D16</a>	D16 Globe Valve	Bronze	PN32
<a href="#">D4</a>	D4 Globe Valve	Bronze	PN20
<a href="#">D46</a>	D46 Globe Valve	Bronze	PN40
<a href="#">D52</a>	D52 Globe Valve	Bronze	PN64
<a href="#">D7</a>	D7 Globe Valve	Bronze	PN32
<a href="#">DM11</a>	DM11 Globe Valve	Bronze	PN25
<a href="#">DM6</a>	DM6 Globe Valve	Bronze	PN16
<a href="#">F254</a>	F254 Globe Valve	Malleable Iron	PN64
<a href="#">F372</a>	F372 Globe Valve	Cast Iron	Class 125
<a href="#">FM369</a>	FM369 Globe Valve	Cast Iron	PN16

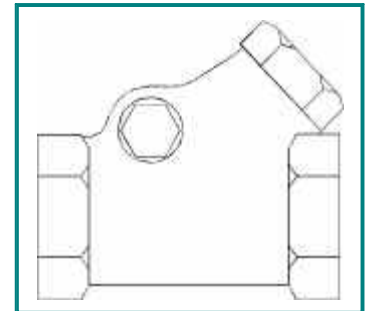
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[\(Jump to Top\)](#)

## Check Valves

Check valves permit flow in one direction only, and close automatically if flow reverses. They are entirely automatic in action, depending upon pressure and velocity of flow within the line to perform their functions of opening and closing.

Most Crane swing check valves can be installed in horizontal or vertical upward flow piping. Lift check valves must be used in horizontal lines only.



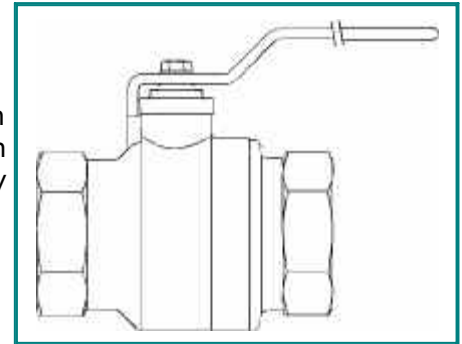
### **Product Range**

Figure Number	Name	Material	Pressure Rating
<a href="#">147XU</a>	147XU Check Valve	Carbon Steel	Class 300
<a href="#">159XU</a>	159XU Check Valve	Carbon Steel	Class 300
<a href="#">D104</a>	D104 Check Valve	Bronze	PN20
<a href="#">D116</a>	D116 Check Valve	Bronze	PN32
<a href="#">D138</a>	D138 Check Valve	Bronze	PN25
<a href="#">D140</a>	D140 Check Valve	Bronze	PN25
<a href="#">D142</a>	D142 Check Valve	Bronze	PN32
<a href="#">F201</a>	F201 Check Valve	Malleable Iron	PN64
<a href="#">F491</a>	F491 Check Valve	Cast Iron	Class 100
<a href="#">F493</a>	F493 Check Valve	Cast Iron	Class 125
<a href="#">FM450</a>	FM450 Wafer Check Valve	Cast Iron	PN16
<a href="#">FM451</a>	FM451 Wafer Check Valve	Cast Iron	PN16
<a href="#">FM469</a>	FM469 Check Valve	Cast Iron	PN10
<a href="#">FM492</a>	FM492 Check Valve	Cast Iron	PN16

[\(Jump to Top\)](#)

## Ball Valves

The Crane range of copper alloy ball valves consists of compact, lightweight units which are easy to install and operate, yet their robust construction ensures long, trouble-free service life. They offer full flow with minimum turbulence in the open position and bubble tight closure in the closed position. Only a quarter-turn is required to fully open or close the valve.



### **Product Range**

Figure Number	Name	Material	Pressure Rating
<a href="#">D171</a>	D171 Ball Valve	Bronze	PN25
<a href="#">D171A</a>	D171A Ball Valve	DZR	PN25
<a href="#">D171AEXS</a>	D171A EXS Ball Valve	DZR	PN25
<a href="#">D171ALS</a>	D171ALS Ball Valve	DZR	PN25
<a href="#">D171AT</a>	D171A T-Handle DZR Ball Valve	DZR	PN25
<a href="#">D171C</a>	D171C Ball Valve	Bronze	PN16
<a href="#">D171CLS</a>	D171CLS Ball Valve	Bronze	PN16
<a href="#">D171CT</a>	D171CT Ball Valve	Bronze	PN16
<a href="#">D171EXS</a>	D171EXS Ball Valve	Bronze	PN25
<a href="#">D171LS</a>	D171LS Ball Valve	Bronze	PN25
<a href="#">D171MHU</a>	D171MHU Ball Valve	Bronze	PN25
<a href="#">D171MHULS</a>	D171MHULS Ball Valve	Bronze	PN16
<a href="#">D171T</a>	D171T Ball Valve	Bronze	PN25
<a href="#">D191</a>	D191 Ball Valve	Brass	PN25
<a href="#">D191EXS</a>	D191EXS Ball Valve	Brass	PN25
<a href="#">D191T</a>	D191T Ball Valve	Brass	PN25
<a href="#">FT161</a>	FT161 Pro Tee Valve	Malleable Iron	PN16
<a href="#">FT161EXS</a>	FT161EXS Pro Tee Valve	Malleable Iron	PN16
<a href="#">FT161LS</a>	FT161LS Pro Tee Valve	Malleable Iron	PN16
<a href="#">FT161T</a>	FT161T Pro Tee Valve	Malleable Iron	PN16

[\(Jump to Top\)](#)

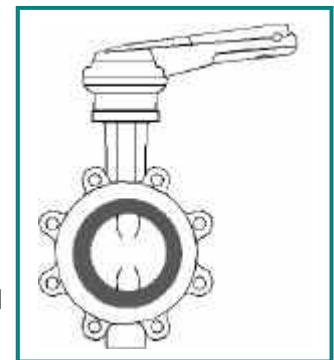
## Butterfly Valves

Crane butterfly valves are compact ¼ turn valves, the body is elastomer lined providing a resilient bubble tight shut off.

The valves are supplied in wafer or lugged variants and may be lever or gearbox operated.

The elastomer lining is EPDM or Nitrile rubber depending on the intended service conditions.

Primarily recommended for on off service, they may also be used for non critical throttling applications. Only a quarter turn is needed to fully open or close the valve.



### **Product Range**

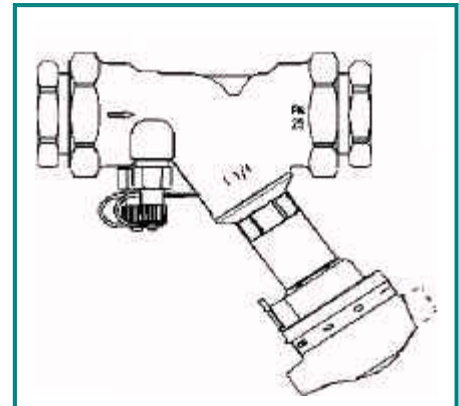
Figure Number	Name	Material	Pressure Rating
<a href="#">F611</a>	F611 GEM Butterfly Valve	Ductile Iron	PN16
<a href="#">F612</a>	F612 GEM Butterfly Valve	Ductile Iron	PN16
<a href="#">F614</a>	F614 GEM Butterfly Valve	Ductile Iron	PN16
<a href="#">F615</a>	F615 GEM Butterfly Valve	Ductile Iron	PN16
<a href="#">F621</a>	F621 GEM Butterfly Valve	Cast Iron	PN16
<a href="#">F622</a>	F622 GEM Butterfly Valve	Cast Iron	PN16
<a href="#">F624</a>	F624 GEM Butterfly Valve	Cast Iron	PN16
<a href="#">F625</a>	F625 GEM Butterfly Valve	Cast Iron	PN16
<a href="#">F626</a>	F626 GEM Butterfly Valve	Ductile Iron	PN16
<a href="#">F627</a>	F627 GEM Butterfly Valve	Ductile Iron	PN16
<a href="#">F628</a>	F628 GEM Butterfly Valve	Cast Iron	PN16
<a href="#">F629</a>	F629 GEM Butterfly Valve	Cast Iron	PN16
<a href="#">FB200</a>	FB200 CENTERLINE Butterfly Valve	Cast Iron	PN16
<a href="#">FB225</a>	FB225 CENTERLINE Butterfly Valve	SG Iron	PN20

[\(Jump to Top\)](#)

## Static Balancing Valves

Established H&V practice recommends that wherever possible within heating and chilled water systems, hydraulic losses should be minimal. Thus flow measurement and regulating valves serving such systems should function with pressure losses as low as efficient operation and high accuracy will permit.

However, in certain circumstances where flow velocities are low as a result of system design, it is equally important that adequate differential pressures are available for accurate flow measurement. This requirement is achieved on the basis of a realistic compromise between the need for accuracy and low hydraulic loss.



Crane flow measurement and regulating valves enable systems design engineers to specify standard production valves which will conform to the various system design options arising from current H&V technology, energy conservation considerations and standards legislation.

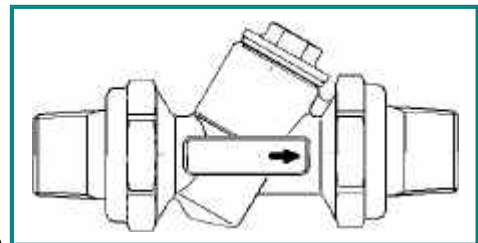
### **Product Range**

Figure Number	Name	Material	Pressure Rating
<a href="#">D901</a>	D901 Flow Measurement Device (FMD)	DZR	PN25
<a href="#">D902</a>	D902 Ultra Low Flow Measurement Device (FMD)	DZR	PN25
<a href="#">D921</a>	D921 Double Regulating Valve (DRV)	Bronze	PN25
<a href="#">D923</a>	D923 Low Flow Double Regulating Valve (DRV)	Bronze	PN25
<a href="#">D931</a>	D931 Fixed Orifice Double Regulating Valve (FODRV)	Bronze	PN25
<a href="#">D933</a>	D933 Low Flow (FODRV)	Bronze	PN25
<a href="#">D934</a>	D934 Ultra Low Flow (FODRV)	Bronze	PN25
<a href="#">DA930</a>	DA930 Variable Orifice Double Regulating Valve	Cast Iron	Class 125
<a href="#">DM900</a>	DM900 Flow Measurement Device (FMD)	Stainless Steel	PN40
<a href="#">DM920</a>	DM920 Double Regulating Valve (DRV)	Cast Iron	PN16
<a href="#">DM925G</a>	DM925G 1/4 Turn Gearbox Operated DRV	Cast Iron	PN16
<a href="#">DM930</a>	DM930 Variable Orifice Double Regulating Valve	Cast Iron	PN16
<a href="#">DM940</a>	DM940 Fixed Orifice Double Regulating Valve	Cast Iron	PN16
<a href="#">DM950G</a>	DM950G Flow Measurement and Regulating Valve	Cast Iron	PN16
<a href="#">P83</a>	P83 Extension Tube	DZR	PN25
<a href="#">P84</a>	P84 Pressure Test Point	DZR	PN25

[\(Jump to Top\)](#)

## Automatic Balancing Valves

The demand for highly controlled yet efficient building environmental control requires system design engineers to embrace new design philosophies. Increasingly variable volume systems are used which, when combined with thermostatic and zone type controls, render the use of static valves inappropriate.



The Crane range of Automatic Balancing Valves combine patented innovative design with maximum flexibility to offer a total solution to hydronic balancing. Primarily designed to be installed in heating and air conditioning terminal units, the valves can be used in a wide variety of applications to guarantee a constant flow rate, even with fluctuating system conditions.

### **Product Range**



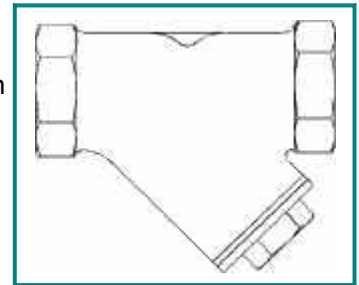
Figure Number	Name	Material	Pressure Rating
<a href="#">D960</a>	D960 Automatic Balancing Valve	DZR	PN20
<a href="#">D970</a>	D970 Automatic Balancing Valve	Brass	PN16
<a href="#">D975</a>	D975 Automatic Balancing Valve	Brass	PN16
<a href="#">DM960</a>	DM960 Automatic Balancing Valve	Cast Iron	PN10

[\(Jump to Top\)](#)

## Strainers

Scale and dirt in piping systems cause endless trouble and frequently serious damage to pipeline equipment. Installation of Crane strainers will help eliminate the problems caused by foreign matter within piping systems.

Generous proportions of Crane strainers allow the units to collect significant quantities of foreign matter before pressure losses necessitate cleaning of the basket.



### Product Range

Figure Number	Name	Category	Material	Pressure Rating
<a href="#">D297</a>	D297 Strainer	Strainer	Bronze	PN32
<a href="#">F273</a>	F273 Strainer	Strainer	Malleable Iron	PN64
<a href="#">F277</a>	F277 Strainer	Strainer	Cast Iron	Class 125
<a href="#">FM276</a>	FM276 Strainer	Strainer	Cast Iron	PN16

[\(Jump to Top\)](#)

## Radiator Valves

Crane radiator valves are manufactured from high-grade materials and use the same functional design as the industrial bronze globe and gate valve patterns. Considerations of the service for which the valve is intended and also compliance with related standards influences dimensions, internal detail, pressure/temperature ratings and importantly, exterior appearance.

Two ranges are available:

The CRUSADER range is eminently suitable for building services installations where durability and rugged construction are predominant, while satisfying the aesthetic requirements demanded for modern commercial and domestic interiors.

The EASYCLEAN range is more traditional in styling but still meets the demanding requirements of many industrial and commercial installations.

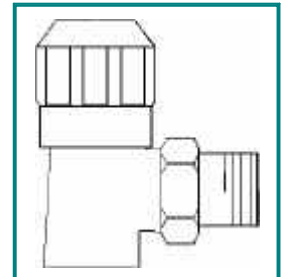


Figure numbers are for valves with a matt bronze finish.  
For other finishes add the following suffix to the figure number:

- Polished Bronze – POL
- Polished chrome plated – CP
- Satin chrome plated – SAT

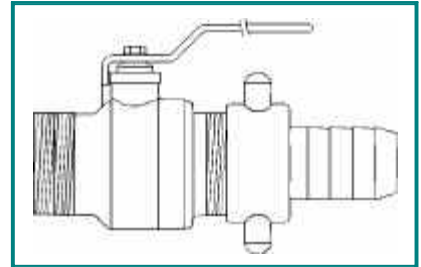
### **Product Range**

Figure Number	Name	Material	Pressure Rating
<a href="#">D201</a>	D201 Radiator Valve	Bronze	PN10
<a href="#">D202</a>	D202 Radiator Valve	Bronze	PN10
<a href="#">D203</a>	D203 Radiator Valve	Bronze	PN10
<a href="#">D880</a>	D880 Radiator Valve	Bronze	PN10
<a href="#">D881</a>	D881 Radiator Valve	Bronze	PN10
<a href="#">D882</a>	D882 Thermostatic Radiator Valve	Bronze	PN10
<a href="#">D890</a>	D890 Radiator Valve	Bronze	PN10
<a href="#">D891</a>	D891 Radiator Valve	Bronze	PN10

[\(Jump to Top\)](#)

## Draining Products

Crane provides a comprehensive range of products for draining including a draw off ball valve, draining tap and a draw off cock.



### **Product Range**

Figure Number	Name	Material	Pressure Rating
<a href="#">D340</a>	D340 Drain Tap	Bronze	PN10
<a href="#">D341</a>	D341 Drain Tap	Bronze	PN10
<a href="#">D344</a>	D344 Draw-Off Cock	Bronze	PN10
<a href="#">D344 .5</a>	D344.1/2 Draw-Off Cock	Bronze	PN10
<a href="#">D171MHU</a>	D171MHU Ball Valve	Bronze	PN25
<a href="#">D171MHULS</a>	D171MHULS Ball Valve	Bronze	PN16

[\(Jump to Top\)](#)

## Needle Valves

Crane bronze needle valves find wide usage in steam, air, water, gas, light liquid and fuel lines where close regulation is required.

### **Product Range**

Figure Number	Name	Category	Material	Pressure Rating
D71	D71 Needle Valve	Needle	Bronze	PN32
D72	D72 Angle Pattern Needle Valve	Needle	Bronze	PN32

[\(Jump to Top\)](#)



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<b>Product Catalogue : Fittings</b> Click on a hyperlink to go to that section	<b>Crane Pipe Fittings Documentation</b> Click on a hyperlink to go display that document
<a href="#">Go Back to Front Page</a>	<a href="#">About Crane Pipe Fittings</a>
<a href="#">Malleable Iron Fittings</a>	<a href="#">Malleable Fittings Reference Sheet</a>
<a href="#">Malleable Iron Unions</a>	<a href="#">Pressure Temperature Chart for Fittings</a>
<a href="#">Malleable Iron Brackets and Hangers</a>	<a href="#">PED Certificate of incorporation</a>
<a href="#">Bronze Pipe Fittings</a>	<a href="#">Kitemark Certificate for Fittings</a>
	<a href="#">Loss Prevention Certification Board Approval</a>

## Introduction

Crane pipe fittings have been produced in the Ipswich Works since 1928 and today the plant is one of Europe's most modern units for large volume production of malleable iron pipe fittings. It is renowned for its rigid enforcement of stringent quality control procedures and inspection at all stages of manufacture. The Crane trademark, coupled with the British Standards Institution Kitemark and other quality assurance scheme approvals ensures that Crane fittings are fully suitable for a wide range of applications and will give reliable service.

## Crane Taper Thread Pipe Fittings

Pipe threads on Crane Pipe Fittings are British Standard taper to BS21 (ISO7-1) unless otherwise stated. Crane Taper Thread Fittings offer installers numerous advantages over equivalent fittings with parallel threads:

- Full engagement the whole thread length - reliable strong joints
- No need for hemp filler - faster installation, lower costs
- High torques can be applied without risk of damaging the fitting
- Freedom to break and re-make joints
- Professional joint appearance

## Pipe threads

The machined threads of Crane fittings are in accordance with ISO7 or BS21 as appropriate. Threads on all fittings are chamfered to assist assembly and avoid 'cross threading'. Female fittings have a chamber behind the thread, permitting the male thread to be assembled without restriction or 'bottoming'.

## Design standards

ISO 49 : 1994 is the international standard for "Malleable cast iron fittings threaded to ISO 7-1. This standard was revised in December 1994 and, compared with the 1983 edition, contained some technical revisions relating to use of alternative ferrous materials, hot dip zinc coatings, dispatch condition, pressure/temperature ratings, acceptance tests, marking and quality assurance. BS EN 10242 : 1995 is the new British European Standard for "Threaded pipe fittings in malleable cast iron" first published in August 1995 and very closely follows ISO 49 : 1994, the main difference being the inclusion of two informative annexes relating to "Assessment of conformity" and the "Relationship with the essential requirements of the Construction Products Directive (84/106/EEC)". All European Standards have to be adopted by the member countries of the EU and any conflicting national standards withdrawn. BS143 and 1256: 2000 has been retained to cover those fittings not in BS EN 10242. It should also be noted that BS EN 10242 details a number of fitting types and sizes which were not included in BS 143 & 1256 because they were not in regular demand and/or not available from UK manufacturers. BS 143 & 1256 : 2000 specifies requirements for the design and performance of "Malleable cast iron and cast copper alloy threaded pipe fittings" and has developed over many years. BS 143 was first published in 1922 and BS 1256 in 1945, subsequently the two standards were combined in 1968. The BS 143 design requires fittings to have taper external threads and taper internal threads conforming to BS 21 (ISO 7-1) whereas the BS1256 design has taper external threads and parallel internal threads. The 1986 revision was more closely related to ISO 49 : 1983 and more accurately reflected the ranges of fittings available from UK manufacturers. BS 143 & 1256 has always been technically more demanding than ISO 49 and consequently BS EN 10242. BS 143 &

1256 were amended in August 1995 to delete those fittings now covered by BS EN 10242, so the scope of BS 143 & 1256 is now essentially : (a) BS 143 design and BS 1256 design fittings in malleable iron not covered by BSEN 10242, (b) BS 143 design fittings threaded to ANSI B1.20.1 (NPT) and (c) BS 143 design fittings made in cast copper alloy (bronze) material.

### **Conformance of Crane fittings**

Both malleable iron and steel fittings have been verified by the British Standards Institute (BSI) as conforming to BS EN 10242 and BS143 & 1256, as appropriate, and as such are permitted to bear the British Standards Kitemark Logo - Kitemark Licence No. KM00382.

Some small size fittings are manufactured in steel and will conform to BS EN 10241.

Crane malleable iron fittings also have the approval of the Loss Prevention Certification Board (LPCD) for use in sprinkler systems.

### **The Pressure Equipment Directive 97/23/EC (PED)**

The Directive applies to the design, manufacture and conformity of pressure equipment and assemblies of pressure equipment with a maximum allowable pressure greater than 0.5 bar. Individual piping components, such as fittings, are excluded from the scope of the Directive and therefore cannot be CE marked. However Crane manufactured pipe fittings are manufactured to the appropriate European standards and satisfy the essential safety requirements of the PED. A "Certificate of Incorporation for Pipe Fittings" can be accessed by clicking the link in the additional documents section at the bottom of this page.

### **Malleable Cast Iron**

Crane malleable iron is of the Blackheart type ideally suited to pipe fitting and manufacture and conforms to BS EN 1562 Designation EN-GJMB-300-6, ASTM A197 and ISO 5922. Typical properties of Crane malleable iron are given in the table below, exceeding the requirements in the above BS EN, ASTM and ISO standards.

<b>Chemical composition</b>	<b>Mechanical properties</b>
Total carbon : 2.80%	Tensile strength N/mm <sup>2</sup> : 340
Silicon : 1.35%	Elongation on 36mm (%) : 12
Manganese : 0.44%	Izod impact (room temp.) (J) : 12
Sulphur : 0.19%	Brinell hardness : 125
Phosphorous : 0.08%	Density (g/cm <sup>3</sup> ) : 7.56

The close relationship between the physical properties of test bars and actual castings ensures design integrity and the preservation of high safety factors. Shock pressures within pipe systems can be tolerated with complete safety. The corrosion resistance of Crane malleable iron is good when compared with grey cast iron and mild steel for most general applications including water, gas and steam.

### **Crane bronze**

Crane bronze has very good resistance to corrosion by aggressive waters, steam and other fluids which promote dezincification in certain copper alloys. It is also suitable for a wide range of temperatures.

### **Mild steel**

BS143 and 1256 allow small size (3/8" and smaller) straight fittings to be supplied in other ferrous materials e.g. mild steel as an alternative to malleable cast iron, providing the mechanical properties are at least equivalent to the specified grade of malleable iron. Individual data pages state which Crane fittings are supplied in mild steel.

### Galvanising

Where additional resistance to corrosion is required, malleable cast iron fittings can be hot-dip zinc coated (galvanised) prior to machining. This process involves coating the fittings with zinc which, in addition to its natural resistance to corrosion, provides electro-chemical protection where the iron of the fitting is exposed by damage. Mild steel fittings can be supplied with a proprietary zinc based coating. The coating weight on Crane galvanised fittings conforms to the requirements of BSEN ISO 1461 1998 and ASTM 153 with a minimum coating of 610 g/m<sup>2</sup> (2oz/ft<sup>2</sup>) equal to a thickness of 86 microns (0.0034 in). Average coatings are well in excess of this and exceed the requirements given in BS EN 10242 and ISO 49. When ordering galvanised or zinc coated fittings add the suffix 'G' to the figure number.

### Testing

Production testing: Meets requirements of BS EN 10242 or BS 143 and 1256 as applicable. Type testing: In addition to production testing, all pressure containing fittings are required by BS EN 10242, BS 143 & 1256 and ISO 49 to be designed to withstand specified design test pressures and to be type tested accordingly - 100 bar (1450 lbf/in<sup>2</sup>) for sizes 4 and smaller malleable iron fittings, 64 bar (928lbf/in<sup>2</sup>) for sizes 5 and 6 malleable iron and all sizes bronze fittings. Tests carried out show that production fittings have safety margins well in excess of the BS requirement. Some typical burst tests on Crane fittings illustrate their capabilities - size «' Fig. No. 193 bend tested to 550 bar (8000 lbf/in<sup>2</sup>) without failure; size 1 Fig. No. 241 flat seat union tested to 248 bar (3600 lbf/in<sup>2</sup>) without failure; size 6 Fig. No. 151 elbow tested to 190 bar (2750 lbf/in<sup>2</sup>) without failure.



### Finish















All malleable iron fittings are given an oil finish as protection against rust while in stock or during transit and after installation prior to plant commissioning. Finished fittings are free of any polycyclic aromatic hydrocarbons.















### Marking

All Crane fittings are marked with the diamond C logo and where size permits, the fitting size and Kitemark symbol. In addition, some castings also display a pattern identification number. This is normally located next to the band of the fitting. This number is used during the manufacturing process as part of the rigorous quality control procedures to ensure consistent high quality castings. The number is not of relevance to the end user of the product.




## Malleable Iron Fittings

	<b><u>M140</u></b>	Hexagon Bush
	<b><u>M144</u></b>	Hexagon Nipple
	<b><u>M145</u></b>	Hexagon Nipple Reducing
	<b><u>M146</u></b>	Beaded Plug Solid
	<b><u>M147</u></b>	Plain Plug Hollow

	<b><u>M148</u></b>	Plain Plug Solid
	<b><u>M149</u></b>	Countersunk Plug
	<b><u>M150</u></b>	Backnut
	<b><u>M151</u></b>	Elbow
	<b><u>M151</u></b>	Elbow (Reducing)
	<b><u>M152</u></b>	Male and Female Elbow
	<b><u>M152</u></b>	Male and Female Elbow (Reducing on Male End Only)
	<b><u>M155</u></b>	45° Elbow
	<b><u>M156</u></b>	45° Male and Female Elbow
	<b><u>M161</u></b>	Tee (Increasing on Branch)
	<b><u>M161</u></b>	Tee (Equal)
	<b><u>M161</u></b>	Tee (Reducing on Branch)
	<b><u>M161</u></b>	Tee (Reducing on Run and Branch)
	<b><u>M161</u></b>	Tee (Reducing on Run)









	<b><u>M163</u></b>	Male and Female Elbow
	<b><u>M171</u></b>	Cross
	<b><u>M176</u></b>	Parallel Thread Socket
	<b><u>M177</u></b>	Taper Thread Socket
	<b><u>M179</u></b>	Socket Reducing
	<b><u>M180</u></b>	Eccentric Socket
	<b><u>M185</u></b>	Cap
	<b><u>M191</u></b>	Male Bend
	<b><u>M192</u></b>	Male and Female Bend
	<b><u>M193</u></b>	Bend
	<b><u>M197</u></b>	Twin Elbow
	<b><u>M199</u></b>	Pitcher Tee (Reducing on Run and Branch)
	<b><u>M199</u></b>	Pitcher Tee (Reducing on Run)
	<b><u>M199</u></b>	Pitcher Tee (Equal)



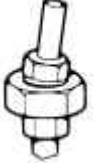


	<b><u>M199</u></b>	Pitcher Tee (Reducing on Branch)
	<b><u>M213</u></b>	Return Bend
	<b><u>M233</u></b>	Round Flange

[\(Jump to Top\)](#)







### Malleable Iron Unions

	<b><u>M241</u></b>	Union Flat Seat
	<b><u>M256</u></b>	Union Spherical Seat, Iron to Iron
	<b><u>M257</u></b>	Male and Female Union, Spherical Seat, Iron to Iron
	<b><u>M261</u></b>	Elbow Union, Spherical Seat, Iron to Iron
	<b><u>M262</u></b>	Male and Female Elbow Union, Spherical Seat, Iron to Iron
	<b><u>M271</u></b>	Union, Spherical Seat, Bronze to Iron
	<b><u>M272</u></b>	Male and Female Union, Spherical Seat, Bronze to Iron
	<b><u>M276</u></b>	Elbow Union, Spherical Seat, Bronze to Iron

	<b><u>M277</u></b>	Male and Female Elbow Union, Spherical Seat, Bronze to Iron
	<b><u>M289</u></b>	Union Spherical Seat, Bronze to Bronze
	<b><u>M290</u></b>	Self Aligning Union

[\(Jump to Top\)](#)

### Malleable Iron Brackets and Hangers

	<b><u>M501</u></b>	Bracket Screw Fixing
	<b><u>M515</u></b>	Backplate, BSP Tapping to BS2779
	<b><u>M515</u></b>	Backplate, Metric Tapping to BS3643
	<b><u>M529</u></b>	Ring, Single Socket, Metric Tapping to BS3643
	<b><u>M530</u></b>	Ring, Double Socket, Metric Tapping to BS3643
	<b><u>M573</u></b>	Rollers and Chairs

[\(Jump to Top\)](#)

### Bronze Pipe Fittings

	<b>J40</b>	Bronze Hexagon Bush
	<b>J44</b>	Bronze Hexagon Nipple
	<b>J45</b>	Bronze Hexagon Nipple Reducing
	<b>J48</b>	Bronze Plain Plug Solid
	<b>J49</b>	Bronze Countersunk Plug
	<b>J50</b>	Bronze Backnut
	<b>J51</b>	Bronze Elbow
	<b>J53</b>	Bronze Male and Female Elbow
	<b>J61</b>	Bronze Tee
	<b>J71</b>	Bronze Cross
	<b>J76</b>	Bronze Parallel Thread Socket
	<b>J79</b>	Bronze Socket Reducing
	<b>J85</b>	Bronze Cap
	<b>J256</b>	Bronze Straight Union

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