





Ductile
Iron
Threaded
Fittings





Ductile Iron Threaded Fittings

"Twice the strength at half the weight"

Ductile Iron A brief history & overview

Ductile iron*1 was invented and first introduced in the United States and England in 1948*2. Cementite, a chemical compound of carbon and iron becomes molten at high temperatures and is transformed into graphite during the cooling process. In standard gray cast iron

this graphite appears in the shape of flakes or lines which indicate the brittle nature of grey iron.

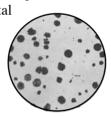
By adding magnesium to the molten metal in combination with ferro silicon as an inoculant you can produce crystallized graphite



Gray Iron (x100)

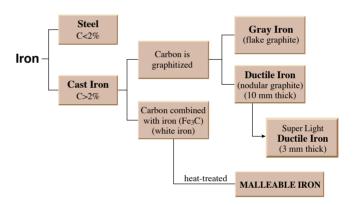
in the shape of nodules. This nodular or ductile iron is very strong. The nodular graphite has a profound effect

on the physical strength of the metal with the tensile strength increasing to a range of 65,000 - 80,000 psi, or two to three times stronger than gray cast iron. The tensile strength can be further increased to a range of 100,000 - 120,000 psi through proper heat treatment.



Ductile Iron (x100)

Soil pipe and fittings were among the first ductile iron applications due to the product strength requirements. Many automotive components also transitioned from gray and malleable iron to ductile iron, thus taking advantage of the strength and weight benefits. Further technological advances in the late 1970's along with the addition of rhenium (Re), a rare earth element, enabled the production of thin-wall castings to 1/8" or 3 mm. Over the past 60+ years ductile iron has and will continue to replace gray cast and malleable iron due to its superior properties.



Physical Properties Comparison

	Tensile Strength psi, min.	Yield Strength psi, min.	Elongation %, min.
Ductile iron	65,000	45,000	12
(A536 Gr. 65-45-12)	(448 MPa)	(310 MPa)	
Ductile iron	120,000	90,000	2
(A536 Gr. 120-90-02)	(827 MPa)	(621 MPa)	
Gray iron (A126 Class A)	21,000 (145 MPa)	Not specified	Not specified
Gray iron (A126 Class B)	31,000 (214 MPa)	Not specified	Not specified
Malleable iron	50,000	32,000	10
(A47 Gr. 32510)	(345 MPa)	(224 MPa)	
Carbon Steel	60,000	35,000	22
(A234 Gr. WPB)	(415 MPa)	(240 MPa)	

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Advantages:

- ★ Stronger and more durable than cast iron
- ★ Lighter than equivalent cast iron fittings equals savings in freight, inventory and overall installation cost
- ★ 100% air under water tested and less prone to porosity than cast iron
- ★ Competitively priced and a better value than cast iron

^{*1} Ductile iron is also known as nodular graphite cast iron, spheroidal graphite cast iron, DCI or SG iron

^{*2} Ductile iron was invented by H. Morrogh (England) and A.P. Gagnebin & K.D. Milles (U.S.A.) in 1948.

Product Description

The *Shurjoint* 800 series includes a complete line of ductile iron threaded fittings in a wide variety of configurations in sizes from 1/2" to 2-1/2". These fittings are all 100% air tested underwater and are rated for 300 psi(CWP). The 800 series fittings are UL, ULC listed and FM approved making them the ideal threaded fitting for fire protection and other applications.



Materials: Ductile iron ASTM A536 Gr. 65-45-12. Max. Working Pressure: (UL, ULC listed/FM approved):

300psi (CWP)

General Dimension: ANSI 16.3 class 150*

Threads: NPT or BSPT

Finish: Black, hot dip galvanized or electro-zinc

plated.

* Except bushing & plugs (B16.14), unions (B16.39 Class 150) & companion flanges (B16.42 Class 150).

Rated Working Pressures

Pressure-temperature ratings are as follows:

Unit: Inch

Temperature	Working Pressures,	Non-Shock (PSIG)
Degree (°F)	Class 150 Flanged Fittings	Class 300 Threaded Fittings
	0 0	
-20 to 100	275	500
150	255	500
200	240	480
250	225	460
300	210	440
350	195	420
400	180	400
450	165	380
500	150	360
550	140	340
600	130	320
650	120	300

Brass to iron seat unions have a maximum temperature of 450° in accordance with the ASME Boiler Code ratings on brass seat materials.



Sprinkler Hubs (See page 7)

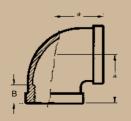


End-All (see page 6)

Note - Installers who have not used ductile iron threaded fittings before should be instructed that the fittings are stronger than the pipe in most cases. In general ductile iron fittings require about a one-half turn less than cast iron fittings. For more information, please refer to the installation instructions on page 8.

General Specifications and Dimensions

These dimensions apply to all standard fittings, both straight and reducing. For centerto-face dimensions(*), see fitting tables.





General Dimensions

Pipe Size	O.D. of Band (H)	Width of Band (E)	Thread Length (min.) (B)
1/2"	1.20	0.25	0.43
3/4"	1.46	0.27	0.50
1"	1.77	0.30	0.58
1-1/4"	2.15	0.34	0.67
1-1/2"	2.43	0.37	0.70
2"	2.96	0.42	0.75
2-1/2"	3.59	0.48	0.92

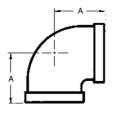






Model 811 90° Elbow





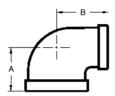
90° Elbow

Unit: Inch

Size	Α	Wt. Lbs.	Box Q'ty
1/2	1.12	0.25	240
3/4	1.31	0.40	120
1	1.50	0.64	70
1-1/4	1.75	0.95	40
1-1/2	1.94	1.24	30
2	2.25	1.74	20
2-1/2	2.70	3.28	10

Model 812 90° Reducing Elbow





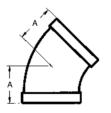
90° Reducing Elbow

Unit: Inch

	Unit. Inch			
Size	Α	В	Wt. Lbs.	Box Q'ty
3/4 x 1/2	1.20	1.22	0.33	160
1 x 1/2	1.26	1.36	0.44	110
1 x 3/4	1.18	1.45	0.53	90
1-1/4 x 1/2	1.34	1.53	0.64	75
1-1/4 x 3/4	1.45	1.62	0.75	60
1-1/4 x 1	1.58	1.67	0.77	55
1-1/2 x 1/2	1.41	1.66	0.92	45
1-1/2 x 3/4	1.52	1.75	0.95	45
1-1/2 x 1	1.65	1.80	0.99	40
1-1/2 x 1-1/4	1.82	1.88	1.14	35
2 x 3/4	1.60	1.97	1.28	30
2 x 1	1.73	2.02	1.58	25
2 x 1-1/2	2.02	2.16	1.67	20
2-1/2 x 2	2.39	2.60	3.01	15

Model 813 45° Elbow





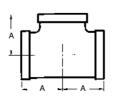
45° Elbow

Unit: Inch

Size	Α	Wt. Lbs.	Box Q'ty
1/2	0.88	0.22	250
3/4	0.98	0.33	150
1	1.12	0.49	90
1-1/4	1.29	0.73	50
1-1/2	1.43	0.93	35
2	1.68	1.54	18
2-1/2	1.95	2.71	12

Model 814 Straight Tee





Straight Tee

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Size	Α	Wt. Lbs.	Box Q'ty
1/2	1.12	0.33	150
3/4	1.31	0.51	90
1	1.50	0.86	60
1-1/4	1.75	1.30	35
1-1/2	1.94	1.63	24
2	2.25	2.64	12
2-1/2	2.70	4.51	8

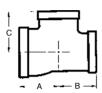






Model 815 Reducing Tee



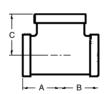


Reducing Tee

3/4 3/4 1/2 1.20 1.20 1.22 0.46 1/2 1 1.50 1.36 1.50 0.71	95 55 80 65 55
1/2 1 1.50 1.36 1.50 0.71	55 80 65 55
	80 65 55
	65 55
1/2 1.26 1.20 1.36 0.58	55
1 3/4 3/4 1.37 1.31 1.45 0.68	
1 1.50 1.45 1.50 0.77	
1 1/2 1.26 1.26 1.36 0.66	65
3/4 1.37 1.37 1.45 0.73	60
1/2 1.34 1.26 1.53 0.82	50
1 3/4 1.45 1.37 1.62 0.90	50
1-1/4 1 1.38 1.30 1.6/ 1.04	45
1-1/4 1.75 1.67 1.75 1.10	40
1/2 1.34 1.34 1.53 0.88	45
1-1/4 3/4 1.45 1.45 1.62 0.94	45
1 1.58 1.58 1.67 1.10	40
1/2 1.44 1.31 1.69 0.97	40
1 3/4 1.50 1.37 1.75 1.15	40
1 1.03 1.30 1.80 1.13	30
1-1/2 1.94 1.80 1.94 1.52	30
1-1/2 1/2 1.41 1.34 1.66 1.04	40
1-1/4 3/4 1.52 1.45 1.75 1.10	40
1 1.65 1.58 1.80 1.32	30
1/2 1.41 1.41 1.66 1.15	35
1-1/2 3/4 1.52 1.52 1.75 1.23	35
1 1.65 1.65 1.80 1.39	30
1-1/4 1.82 1.82 1.88 1.50	30
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	15 15
1-1/4	30
3/4 1.60 1.52 1.97 1.61	25
1-1/2 1 1.73 1.65 2.02 1.65	20
1-1/2 1 1.73 1.03 2.02 1.03 1-1/2 2.02 1.94 2.16 2.02	20
2 2.25 2.16 2.25 2.31	15
1/2 1.49 1.49 1.88 1.54	30
3/4 1.60 1.60 1.97 1.67	20
2 1 1.73 1.73 2.02 1.92	20
1-1/4 1.90 1.90 2.10 2.05	20
1-1/2 2.02 2.02 2.16 2.11	15
2-1/2 2 3/4 1.74 1.60 2.32 2.22	15

Model 815 Bullhead Tee





Bullhead Tee

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	Size		Α	В	С	Wt. Lbs.	Box Q'ty
3/4	3/4	1	1.45	1.45	1.37	0.66	65
1	1	1-1/4	1.67	1.67	1.58	0.97	45
1	1	1-1/2	1.80	1.80	1.65	1.15	35
	1	1-1/2	1.88	1.80	1.82	1.43	30
1-1/4	1-1/4	1-1/2	1.88	1.88	1.82	1.52	30
	1-1/4	2	2.10	2.10	1.90	1.80	24
1-1/2	1-1/4	2	2.16	2.10	2.02	1.94	20
1-1/2	1-1/2	2	2.16	2.16	2.02	2.00	20
2	2	2-1/2	2.60	2.60	2.39	3.61	10

Model 816 Reducing Coupling





Reducing Coupling

Size	Α	Wrench Size	Wt. Lbs.	Box Q'ty
3/4 x 1/2	1.63	1-1/4	0.36	150
1 x 1/2	1.69	1-1/4	0.37	140
1 x 3/4	1.37	1-1/2	0.53	120
1-1/4 x 3/4	2.06	1-1/2	0.69	80
1-1/4 x 1	2.06	-	0.66	60
1-1/2 x 1	2.31	-	0.84	50
1-1/2 x 1-1/4	2.31	-	0.90	45
2 x 1	2.81	-	1.34	35
2 x 1-1/4	2.81	-	1.39	30
2 x 1-1/2	2.81	-	1.41	30
2-1/2 x 2	3.25	-	2.44	18

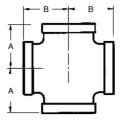






Model 817 Cross

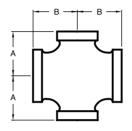




Cross				Unit: Inch
Size	Α	В	Wt. Lbs.	Box Q'ty
1/2	1.12	1.12	0.40	90
3/4	1.31	1.31	1.80	60
1	1.50	1.50	0.97	45
1-1/4	1.75	1.75	1.58	25
1-1/2	1.94	1.94	1.89	20
2	2.25	2.25	0.73	10

Model 817 Reducing Cross





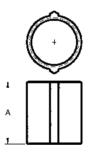
Reducing Cross

Unit: Inch

Size	Α	В	Wt. Lbs.	Box Q'ty
1-1/4x1-1/4x1x1	1.67	1.58	1.25	30
1-1/2x1-1/2x1x1	1.80	1.65	1.47	24
2 x 2 x 1 x 1	2.02	1.73	2.64	10

Model 818 Straight Coupling





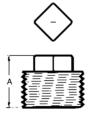
Straight Coupling

Unit: Inch

Size	Α	Wrench Size	Wt. Lbs.	Box Q'ty
1/2	1.38	1-1/8"	0.18	360
3/4	1.61	1-3/8"	0.26	200
1	1.77	1-11/16"	0.44	110
1-1/4	2.00	2"	0.55	75
1-1/2	2.20	2-1/4"	0.71	60
2	2.60	2-3/4"	1.15	30
2-1/2	3.00	3-3/8"	2.29	18

Model 819 Plug





Plug

Unit: Inch

Size	Α	Wt. Lbs.	Box Q'ty
1/2	0.93	0.09	500
3/4	1.13	0.18	300
1	1.25	0.25	200
1-1/4	1.36	0.51	110
1-1/2	1.45	0.71	80
2	1.50	0.99	45

Model 820 Cap





Сар			Unit: Inch
Size	Α	Wt. Lbs.	Box Q'ty
1/2	0.89	0.14	500
3/4	1.00	0.20	300
1	1.18	0.33	180
1-1/4	1.32	0.46	110
1-1/2	1.38	0.57	80
2	1.48	0.88	45
2-1/2	1.77	1.54	25







Model 825 Extension Piece





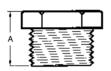
Extension Piece

Unit: Inch

Size	L	Wt. Lbs.	Box Q'ty
1/2 x 1-1/2L	1.50	0.20	300
1/2 x 2L	2.00	0.26	250
3/4 x 1-1/2L	1.50	0.22	250
3/4 x 2L	2.00	0.31	200

Model 827 Hex Bushing





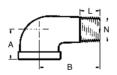
Hex Bushing

Unit: Inch

Size	Α	Wt. Lbs.	Box Q'ty
1 x 1/2	1.06	0.22	280
1 x 3/4	1.06	0.18	280
1-1/4 x 1	1.18	0.31	150
1-1/2 x 1	1.26	0.53	100
1-1/2 x 1-1/4	1.26	0.35	100
2 x 1	1.34	0.68	80
2 x 1-1/4	1.34	0.66	80
2 x 1-1/2	1.34	0.62	80

Model 831 90° Long Stree Elbow





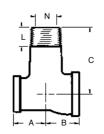
90° Long Street Elbow

Unit: Inch

Size	Α	В	Wt. Lbs.	Box Q'ty
1 x 1/2M	1.50	3.00	0.68	80
1 x 1M	1.50	3.00	0.73	60

Model 832 Long Street Tee





Long Street Tee

Size	Α	В	С	Wt. Lbs.	Box Q'ty
1 x 1/2 x 1M	1.50	1.40	3.00	0.91	50
1 x 1 x 1M	1.50	1.50	3.00	0.99	45

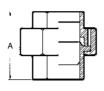






Model 830 Brass Seat Union





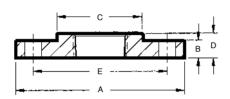
Brass Seat Union

Unit: Inch

Size	Α	Wt. Lbs.	Box Q'ty
1/2	1.81	0.46	110
3/4	1.99	0.66	80
1	2.17	1.08	50
1-1/4	2.52	1.54	35
1-1/2	2.64	2.02	25
2	3.15	3.15	18

Model 841 Companion Flange

The Model 841 is a traditional companion flange used for transition from a flanged to a threaded piping system.





Class 150 Ductile Iron Flange

Unit: Inch

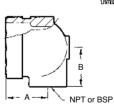
Nominal Pipe Size	A	В	С	D	E	weight Lbs
1	4.25	0.56	1.94	0.69	3.12	1.75
1-1/4	4.62	0.62	2.31	0.81	3.50	2.20
1-1/2	5.00	0.69	2.56	0.88	3.88	2.55
2	6.00	0.75	3.06	1.00	4.75	4.20
2-1/2	7.00	0.88	3.56	1.12	5.50	5.85
3	7.50	0.94	4.25	1.19	6.00	6.60
4	9.00	0.94	5.31	1.31	7.50	11.75
6	11.00	1.00	7.56	1.56	9.50	16.50
8	13.50	1.12	9.69	1.75	11.75	26.00

Model 899 End-All Fitting

The Model 899 End-All fitting is a unique domed end cap fitting available with 1/2", 3/4" and 1" NPT or BSP threaded outlets. Designed as an end of line fitting the End-All features two multi-function bosses which can be used for the direct connection of sprinkler heads, sprigs, drops, drains and or gauges.







Unit: Inch

Nominal Size	Dimensions		Weight
Grooved X Threaded	Α	В	Lbs
1-1/4 x 1/2	1.75	1.19	0.7
1-1/4 x 3/4	1.75	1.19	0.7
1-1/4 x 1	1.90	1.25	0.7
1-1/2 x 1/2	1.75	1.31	0.9
1-1/2 x 3/4	1.75	1.31	0.9
1-1/2 x 1	1.90	1.38	0.9
2 x 1/2	1.75	1.56	1.1
2 x 3/4	1.75	1.56	1.1
2 x 1	1.90	1.63	1.1
2-1/2 x 1/2	1.75	1.75	1.3
2-1/2 x 3/4	1.75	1.75	1.3
2-1/2 x 1	1.90	1.81	1.3





Sprinkler Hub

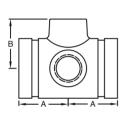
Models 850, 851 & 853

The Shurjoint Sprinkler Hubs are grooved-end manifold fittings with a number of threaded outlets to accommodate flexible sprinkler hoses. The Sprinkler Hubs can also be used in combination with flexible sprinkler hoses and traditional hard piping depending on your requirements. These fittings work as a hub for multiple flexible hoses and or hard pipe runs, thus reducing the number or

headers, drop nipples and fittings required. All outlets are 1" NPT or BSPT. Maximum working pressure 300 psi (20 bar, 2.0 MPa) CWP. cULus listed and FM approved.



Model 850 Sprinkler Hub - 3 Outlets

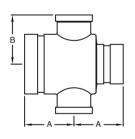




Nominal Size mm/in	A mm/in	B mm/in	N.W. Kgs/Lbs
50 x 50 x 25 (3)	60	51	1.00
2 x 2 x 1 (3)	2.38	2.02	2.20
65 x 65 x 25 (3)	60	57	1.25
2-1/2 x 2-1/2 x 1 (3)	2.38	2.25	2.75

(): Number of outlets

Model 851 Reducing Sprinkler Hub - 3 Outlets

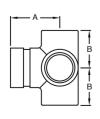




Nominal Size mm/in	A mm/in	B mm/in	N.W. Kgs/Lbs	
50 x 40 x 25 (3)	60	51	1.00	
2 x 1-1/2 x 1 (3)	2.38	2.02	2.20	
65 x 40 x 25 (3)	60	57	1.20	
2-1/2 x 1-1/2 x 1 (3)	2.38	2.25	2.65	
65 x 50 x 25 (3)	60	60	1.30	
2-1/2 x 2 x 1 (3)	2.38	2.25	2.86	

(): Number of outlets

Model 853 Sprinkler End Hub - 4 Outlets





Nominal Size mm/in	A mm/in	B mm/in	N.W. Kgs/Lbs
40 x 25 (4)	60	46	0.8
1-1/2 x 1 (4)	2.38	1.80	1.76
50 x 25 (4)	60	51	1.00
2 x 1 (4)	2.38	2.02	2.20
65 x 25 (4)	60	57	1.20
2-1/2 x 1 (4)	2.38	2.25	2.64

(): Number of outlets

Installation Instructions

Installers who have not used ductile iron fittings before should be aware that these fittings are stronger that than the pipe they are used in conjunction with in most cases. Therefore over-tightening the fitting can damage the pipe threads and create leaks. In general ductile iron fittings require about one-half turn less than the equivalent gray cast ion fitting.

- (1) **Pipe Threads:** All pipe threads must be fabricated to ANSI B1.20.1 NPT (or BSPT threads to ISO 7 depending on countries installed).
 - ☑ Improper threads and or depth will affect sealing.
- (2) Clean Threads: All threads must be clean and free of rust and debris prior to application joint sealant (tape or paste).
- (3) **Sealant Application:** Apply a moderate amount of high quality sealant (Teflon based pipe paste or Teflon tape is recommended). The sealant should be applied evenly across the full length of the pipe threads.
 - If using Teflon tape, it should be applied with a minimum of three overlapping wraps along the full length of the threads. Wrap the tape from left to right starting at the beginning of the thread.
- (4) Make-On Fitting: Firmly tighten the fitting by hand. With the pipe firmly secured, advance the fitting two to three complete revolutions using a pipe wrench.
 - If using an automatic make-on machine, please note that the torque parameters for ductile iron fittings will be different from that of gray cast and malleable iron threaded fittings. Use caution when setting these parameters prior to tightening the fittings on to male threads. In general ductile iron fittings require about one-half turn less than the equivalent gray cast ion fitting.

- (5) Test and Inspection: Upon completion of installation, pressurize the system and inspect for leaks. If a leak is detected, advance the fitting to tighten and retest and inspect.
 - Over tightening fittings may result in joint failure.
 - Do not back-off fittings during or after tightening. If necessary to remedy a leak begin again at step 2 and repeat the steps.
 - Piping systems must always be depressurized and drained before attempting to disassemble, remove or adjust any piping component.
- (6) Care & Maintenance: Ductile iron fittings in most applications do not require and special ongoing maintenance. Always follow generally accepted piping principles when caring for a piping system and ensure the entire system is maintained per all local codes and requirements including the most current version of NFPA Standard 25, entitled Inspection, Testing and Maintenance of a Water Based Fire Protection Systems.

Terms and Conditions

Controlling Provisions:

These terms and conditions shall control with respect to any and all purchase orders or sales of *Shurjoint* products.

No alteration, modification or waiver of these terms and conditions whether on the customer's purchase order or otherwise shall be valid unless the alteration, modification or waiver is specifically accepted in writing by an authorized representative of Shurjoint Piping Products, Inc.

Shipping Terms:

All orders are quoted F.O.B. shipping point unless otherwise agreed upon in writing.

Orders are accepted subject to approval by our Head Office and Credit Department and are contingent upon acts of God, war, civil unrest or disturbance, strikes, labor difficulties, governmental regulations or rulings, delays of carriers (land, air or ocean), inability to obtain materials, accidents or any other cause beyond our control.

Shipping dates are estimated, and we will do our best to ship within the time estimated. We cannot guarantee shipping dates, and in the event of a production or shipment delay, we reserve the right to change the estimated shipping date. Under no circumstances shall Shurjoint be liable for damages of any kind, including but not limited to incidental or consequential damages for lost sales or profits or liquidated damages, directly or indirectly arising from delays or failure to meet shipping dates.

Orders accepted cannot be changed or cancelled without our written consent.

Orders for special (non-standard) goods may not be cancelled, nor will we accept return of these goods for credit.

Claims For Shortages:

All claims for shortages must be made within 10 days of receipt of goods. Our responsibillity ceases when the goods are delivered to the carrier in good condition. Carriers are responsible for goods lost, damaged or delayed in transit. For your own protection have the transportation company's agent verify any damage, shortage or delay and note them on the freight bill over his/her signature.

Weights:

All weights are approximate and subject to change without notice.

Always specify gasket grade when ordering and double check the gasket grade received to be sure it is suited for the service intended.

Shurjoint reserves the right to change or modify product designs, specifications and/or standard equipment without notice and without incurring obligation. Prices and Terms and Conditions of Sale are subject to change without notice.

Warranty

We warrant all *Shurjoint* products to be free from defects in materials and workmanship under normal conditions of use and service. Our obligation under this warranty is limited to repairing or replacing at our option at our factory or designated facility any product which shall within one year after delivery to the original buyer be returned with transportation charges prepaid, and which our examination and inspection shall show to our satisfaction to have been defective.

This warranty is made expressly in lieu of any other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular purpose. The buyer's sole and exclusive remedy shall be for the replacement or repair of defective products as provided herein. The buyer agrees that no other remedy (including but not limited of), incidental or consequential damages for lost profits, lost sales, injury to person or property or any other incidental or consequential loss shall be available to him/her.

Shurjoint neither assumes nor authorizes any person to assume for it any other liability in connection with the sale of such products.

This warranty shall not apply to any product which has been the subject to misuse, negligence or accident, which has been repaired or altered in any manner outside of *Shurjoint's* factory or designated facility or which has been used in a manner contrary to *Shurjoint's* instructions, recommendations or generally accepted practices. Shurjoint shall not be responsible for design errors due to inaccurate or incomplete information supplied by the buyer or his representatives. (Effective July 1, 1998)

Packing & Weights

All *Shurjoint* ductile iron fittings are packaged in cartons measuring L - 12" x W - 10" x H - 8". See the specification table for box quantities and individual item weights. The standard crate/pallet quantity is 36 cartons. Use this information when order and selling to aid in your inventory control and to minimize handling.





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Your local distributor is:					

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