



Champion[®]
HAZDUCT

Champion Fiberglass began production of fiberglass conduit (referred to as Reinforced Thermoset Resin Conduit or RTRC in the National Electric Code [NEC]) and fittings in 1988. Since then, Champion Fiberglass has developed into the most advanced manufacturing facility of fiberglass conduit in the world. Its well-trained and highly efficient workforce utilizes state-of-the-art proprietary high-speed winding equipment and high-temperature curing ovens to develop the world's most advanced, highest-quality fiberglass conduit.

In 1989, Champion Fiberglass developed the first fiberglass conduit from an epoxy resin for use above ground. The conduit meets the most stringent industry specifications for flame resistance (UL 94) and smoke generation (ASTM E84). Today, **Champion Duct**[®] epoxy conduit is UL and CSA listed for both above (UL 2515, UL 2515A and CSA) and below ground (UL 2420 and CSA) applications.

Another milestone was achieved in 2006 when Champion Fiberglass completed development of the first zero-smoke, zero-halogen, two-hour fire-rated Phenolic Conduit System called **Flame Shield**[®] made entirely from non-toxic chemicals. It does not include toxic chemicals such as formaldehyde, etc. **Flame Shield** has become the conduit of choice for subways, mass transit passenger stations and tunnel two-hour fire-rated applications. **Flame Shield** meets the requirements of **NFPA 130** and **NFPA 502**.

In 2008, after many years of continuous effort and work with UL and the NEC, **Champion Haz Duct**[®] Type XW Conduit was certified for use in **Class I, Division 2 and Zone I, Division 2** applications per the NEC.

In 2017, Champion Fiberglass completed a revolutionary development by establishing the first fiberglass conduits in the industry with UL-listed extended support spans that rival steel conduit support spans.

When you combine all the above achievements together, it's clear that Champion Fiberglass, Inc. is the industry-leading manufacturer of fiberglass conduit, fiberglass strut and conduit bridge hangers for the electrical market. Champion Fiberglass is the only fiberglass conduit manufacturer that is **ISO 9001** and **ISO 14001** certified, offering its customers innovative solutions with the highest-quality products, support staff and service in the industry.



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XW Conduit 11-41



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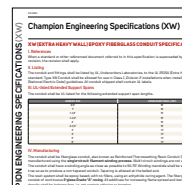
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Champion Fiberglass Applications

Petrochemical/Chemical

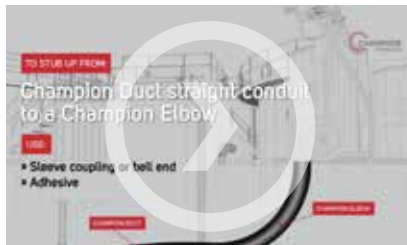
Champion Haz Duct Type XW[®] conduit is a natural fit for petrochemical plant projects. This flame-resistant product features low-smoke characteristics, is UL 2515-A listed, and is up to withstanding the most volatile environments.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in petrochemical projects.

Wastewater Treatment

Champion Fiberglass does more to stand up to the caustic, damp environments represented by wastewater treatment facilities. This lightweight, non-corrosive conduit is a cost-effective, long-term solution.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in wastewater treatment facilities.

Transportation Bridges/DOT

Bridge projects call for lightweight conduit that doesn't sacrifice strength. Champion Fiberglass conduit keeps these projects on budget, lowers manpower costs and increases safety.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in bridge projects.

Pipeline

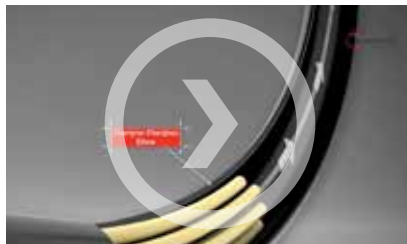
Champion Haz Duct Type XW conduit is an excellent choice for injection and compressor stations, block valve and regulator stations and final delivery stations of pipeline applications. The Type XW Class I, Division 2 features offer protection in highly-corrosive, hazardous classified areas.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in pipeline projects.

Data Centers

Champion Fiberglass conduit is a durable and cost-efficient solution for data centers. It withstands cable burn-through, tolerates electrical faults and guards against corrosion to protect cables and wire, secure data and preserve technology infrastructure.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in data centers.

Docks/Piers/Airports/ Port Authorities

From UV stability, to weather resistance, to our XW type conduit built to withstand debris, Champion Fiberglass can help ensure worry-free performance in industrial, aero and marine environments.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in marine and airport environments.

Subways/Tunnels/DOT

It's goodbye to galvanized rigid steel and hello to our Type XW Phenolic Flame Shield® Conduit, the go-to for electrical engineers who value a light-weight, non-corrosive, zero-smoke, zero-halogen option that meets today's rigorous two-hour fire-resistant safety standards.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit safety advancements in tunnel projects.

Mining

Extreme environments require extremely durable, non-corrosive conduit. Through high-quality, lightweight conduit construction, Champion Fiberglass delivers just that.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in mining projects.

Utilities

Champion Fiberglass is specifically engineered to provide long-lasting solutions for utilities projects – no burn-through, low material cost and elbows fit for every configuration are just a few of the ways we support your projects' success.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in utility projects including the Hoover Dam.

Industrial/Commercial

Engineered for extreme corrosion resistance and UV stability, Champion Fiberglass can stand up to virtually any installation environment – indoor, outdoor, above or below ground – Champion has the right fit for your conduit needs.



Use your smart phone's camera or QR code scanner to learn more about Champion Fiberglass conduit use in industrial/commercial projects.

Features and Advantages

		EPOXY FIBERGLASS (XW)	PVC SCH 40	PVC SCH 80	GALVANIZED RIGID STEEL	PVC-COATED STEEL	ALUMINUM
Cable Fault Fiberglass conduit will not melt or weld the wire to the inside of the conduit under fault conditions as can happen with PVC, steel and aluminum conduit.		Not Affected	Melt/ Fuse	Melt/ Fuse	Weld	Weld	Weld
Toxicity/Halogens Fiberglass conduit does not release toxic halogens (i.e. chlorine and bromine) when burning.		No	Yes	Yes	No	Yes	No
Weight Comparison							
	3/4"	61	22	29	109	112	36
	{XW - lbs/per 100 ft}	68	33	41	161	174	54
	Fiberglass conduit offers the lowest weight and is still very rigid.	82	44	59	218	237	72
	1-1/4"	118	53	73	263	281	89
	1-1/2"	126	75	99	350	358	119
	2"	154	119	152	559	593	187
	2-1/2"	182	161	202	727	772	246
	3"	238	231	302	1,030	1,089	350
	4"	294	313	433	1,400	1,535	479
	5"	350	407	595	1,840	2,025	630
	6"						
Temperature Range (°F) Fiberglass has an excellent wide temperature range.		-60° to +250°	+40° to +150°	+40° to +150°	N/A	N/A	N/A
Handling in Low Temperatures Fiberglass conduit has been shown to retain its properties at low temperatures allowing year-round installations.		Excellent	Brittle	Brittle	Excellent	Excellent	Excellent

		CURRENT PVC AND RTRC SPACING PER NEC	CHAMPION FIBERGLASS UL-LISTED – XW SUPPORT SPANS	GRC, PVC-COATED AND ALUMINUM SPACING
Support Spans				
	3/4"	3'	10'	10'
	Champion Fiberglass support spans are	3'	10'	12'
	1"	3'	15'	14'
	UL listed. Conduit listed for support	3'	15'	14'
	spacing other than shown in NEC Table	3'	15'	16'
	1-1/4"	3'	15'	16'
	1-1/2"	3'	17'	20'
	2"	3'	17'	20'
	355 shall be permitted to be installed in	3'	17'	20'
	accordance with the UL Listing.	3'	17'	20'
	2-1/2"	3'	17'	20'
	3"	3'	17'	20'
	4"	3'	17'	20'
	5"	3'	17'	20'
	6"	3'	17'	20'

	EPOXY FIBERGLASS (XW)	PVC SCH 40	PVC SCH 80	GALVANIZED RIGID STEEL	PVC-COATED STEEL	ALUMINUM	
Burn-through (Cable Pull) Fiberglass conduit is an excellent material for avoiding "burn-through" when pulling cable.	No	Yes	Yes	No	No	No	
Coefficient of Friction Using PVC Jacketed Cable Fiberglass conduit offers one of the lowest coefficient of friction available today for conduit systems. It is completely resistant to any of the current pulling lubricants' corrosive properties.	0.38	0.90	0.90	0.55	0.55	0.61	
Conductivity Fiberglass conduit acts as an excellent insulator.	No	No	No	Yes	Yes	Yes	
Ultraviolet Stable (Sunlight Resistance) (Per UL 2515 and CSA C22.2 No. 211.3-96)	Good	Poor	Poor	Excellent	Poor	Excellent	
Coefficient of Thermal Expansion [1.2 x 10⁻⁵ in/in/°F [2.2 10⁻⁵ m/m/°C]] * The coefficient is 0.7 for the steel and 3.5 for the PVC layer. Because of the broad difference between the two materials, adhesion is severely affected during temperature contraction and expansion.	1.0	3.5	3.5	0.7	3.5/0.7*	3.5	
Distance Between Expansion Joints (ft)	200'	50'	50'	200'	200'	50'	
NECA Labor Installation Rates (Normal installation man/hours per/100 ft) (REF: NECA Manual of Labor Units) * Reduce labor units by 10% for 20-foot lengths	3/4" 1" 1-1/4" 1-1/2" 2" 2-1/2" 3" 3-1/2" 4" 5" 6"	5.5 5.8 6.0* 6.4* 6.8* 7.1* 7.5* 7.9* 8.3* 8.6* 9.0*	4.5 5.3 6.0 7.0 8.0 9.0 10.0 12.0 14.0 18.0 24.0	5.4 6.3 7.2 8.4 9.6 10.8 12.0 N/A 16.8 21.6 28.8	6.0 7.0 8.0 9.0 11.0 15.0 20.0 25.0 30.0 38.0 48.0	8.0 10.0 12.0 15.0 18.0 21.0 26.0 32.0 38.0 45.0 60.0	5.5 6.0 6.5 7.0 8.0 10.0 12.0 15.0 19.0 24.0 30.0
Field Handling Due to its light weight, ease of cutting and integral bell, fiberglass conduit is very easy to install.	Excellent	Good	Good	Very Poor	Very Poor	Poor	
Memory Fiberglass conduit will retain its original shape after impact or compression.	Yes	No	No	No	No	No	

Conduit Selection

Differences Between Above Ground and Below Ground Conduit

The difference between above ground and below ground conduit is in their relative fire resistance. Above ground conduit has fire resistance per UL 2515 and CSA C22.2 No. 2515 standards, meaning that the conduit will self-extinguish within 15 seconds after each of five successive flame applications per the UL 94 (vertical) flame test standard. Below ground conduit meets UL 94 (horizontal burn) requirements, which are less stringent than vertical burn requirements.

Above and below ground conduit share many other properties: dimensions, colors, physical and mechanical properties are the same. Because of its higher flame resistance, conduit that is manufactured and labeled for use in "above ground" applications is suitable and can be used for "below ground" applications as well.

Conduit Application Guidelines

The following recommendations must be verified by the contractor/installer and approved by the engineer of record. The information is strictly for use as a guideline and should be taken as a suggestion only.

Above Ground and Under Bridge

For above ground applications, we recommend that all conduit joints be bonded together with epoxy adhesive.

- The conduit types that have connections that require epoxy adhesive are Straight Socket.
- These joining systems are available with XW epoxy resin conduits.

It is recommended that the conduit diameter be based on the allowable wire fill section in this catalog. Determine the support span of your conduit by reviewing the support span section of this catalog. Champion Fiberglass has UL-Listed, NEC-compliant extended support span distances that exceed the charts shown in Article 355 of the NEC. A mid-span deflection of 5/8" (16 mm) should not be exceeded.

Encased in Concrete (EB quality)

For most concrete encasement applications, XW conduit is more than sufficient.

- Due to its high temperature rating (250°F), epoxy fiberglass conduit performs well when encased in concrete. (This recommendation may not apply for core boring applications.)

Jack and Bore

Due to the possibility of high pressure caused by concrete, XW (Extra Heavy Wall) conduit should be used.

- The installing contractor must observe and apply proper industry-accepted standards and procedures when pumping the concrete into the core.
- If excessive pressures are reached, even XW conduit may fail.

Direct Buried (DB quality)

For direct buried applications that have deep trenches, special soil conditions, or high rates of soil compaction, XW conduit can be used.

High-impact Areas - Bullet Resistant

For high-impact or Class I, Division 2 applications, XW conduit may be used.

- Many utility companies utilize XW conduit for the protection of their fiber-optic cables in above ground and under bridge applications.
- XW conduit has been shown to stop a .45 caliber bullet at 20 ft.

Note: ID (inside diameter) tubular type conduit has a smaller OD and therefore standard pipe clamps may be used with this type of conduit, but the sizing and fit will not be as designed. Care should be taken to choose the right size pipe clamp inside diameter for the appropriate sized ID tubular type conduit outside diameter.

Conduit UL-Listed Extended Support Spans

Champion Fiberglass conduit has been UL Listed for extended support spans. This UL listing allows for longer Champion Fiberglass conduit support spans (than outlined in the NEC) thereby reducing overall installation costs by reducing the number of required supports.

As written in Article 355.30 (B) of the NEC (National Electric Code), "Conduit listed for support spacing other than shown in Table 355.30 shall be permitted to be installed in accordance with the listing."

NEC Table 355.30

CONDUIT SIZE	SUPPORT SPACING
3/4"	3'
1"	3'
1-1/4"	5'
1-1/2"	5'
2"	5'
2-1/2"	6'
3"	6'
4"	7'
5"	7'
6"	8'

Below are the UL extended support spans for Champion Fiberglass conduit:

Champion Fiberglass UL-Listed Support Spans

Comparison to GRC and PVC-coated steel conduit support spacing

CONDUIT SIZE	XW SUPPORT SPACING	GRC AND PVC-COATED STEEL SUPPORT SPACING
3/4"	10'	10'
1"	10'	12'
1-1/4"	15'	14'
1-1/2"	15'	14'
2"	15'	16'
2-1/2"	15'	16'
3"	17'	20'
4"	17'	20'
5"	17'	20'
6"	17'	20'

Features and Benefits

The Champion Fiberglass UL Listing for Extended Support Spans offers the following features and benefits:

- Champion Fiberglass support spans are comparable to GRC and PVC-coated conduit systems.
- Champion Fiberglass support spans exceed what is available from all other RTRC manufacturers.
- Lower material and installation labor costs are realized when fewer supports are required.

Weathering Effects of Ultraviolet

Weathering Effects of Ultraviolet

Champion Fiberglass adds ultraviolet stabilizers and pigments into its standard epoxy resins to slow the effects of weathering. The conduit also is subjected to accelerated ultraviolet testing (2,000 hours Xenon arc accelerated ultraviolet testing) by UL as a requirement for UL certification. However, depending on the geographical location of an installation, it is possible that conduit seeing continuous exposure to outdoor weathering and sunlight may experience some degradation in surface appearance. Continuous exposure to ultraviolet light may cause the surface of the conduit to fade and lose its gloss. Over longer periods of time, in extreme cases, the fiberglass strands closest to the surface may become exposed. This condition is often referred to as "fiber-bloom." This condition does not affect the conduit physical properties or structural integrity. It is purely aesthetic as the exterior layer of winding glass is designed to be sacrificial. At this point, the conduit appearance may not be aesthetically pleasing, but it is structurally sound and capable of performing its intended purpose. For very severe UV conditions, Champion Fiberglass offers a special UV-resistant conduit which assures the conduit to have a 10-year life span before fiber-bloom appears.

When fiberglass conduit begins to show signs of weathering, a protective coating can be applied. Champion recommends coating the conduit with an outdoor urethane or acrylate paint. This will protect the conduit from the future effects of weathering and prolong the conduit system life.

If your application will experience extreme exposure to ultraviolet, please contact Champion Fiberglass to discuss the extreme ultraviolet resistant conduit options that are available.



Expansion Joints

Expansion Joints per NEC

NEC 2011 Article 355.44 Expansion Fittings. "Expansion fittings for RTRC shall be provided to compensate for thermal expansion and contraction where the length change, in accordance with Tables 355.44, is expected to be 6 mm (1/4 in) or greater in a straight run between securely mounted items such as boxes, cabinets, elbows, or other conduit terminations."

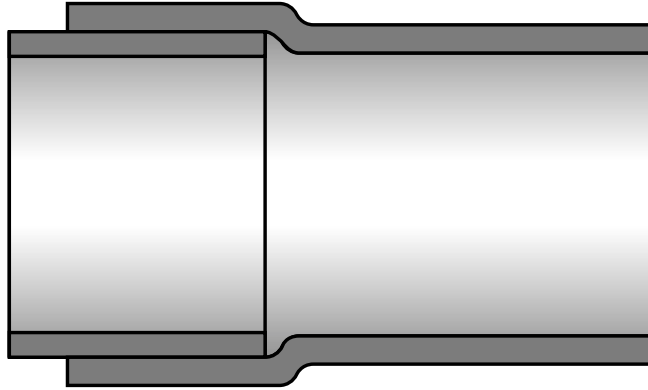
Table 355.44
Expansion Characteristics of Reinforced Thermosetting Resin Conduit (RTRC)
 Coefficient of Thermal Expansion = 1.2 x 10⁻⁵ in/in/°F (2.2 x 10⁻⁵ m/m/°C)

TEMPERATURE CHANGE (°F)	LENGTH CHANGE OF RTRC CONDUIT (IN/100 FT)	TEMPERATURE CHANGE (°F)	LENGTH CHANGE OF RTRC CONDUIT (IN/100 FT)	TEMPERATURE CHANGE (°C)	LENGTH CHANGE OF RTRC CONDUIT (MM/M)
5°	0.09"	105°	1.89"	5°	0.14
10°	0.18"	110°	1.98"	10°	0.27
15°	0.27"	115°	2.07"	15°	0.41
20°	0.36"	120°	2.16"	20°	0.54
25°	0.45"	125°	2.25"	25°	0.68
30°	0.54"	130°	2.34"	30°	0.81
35°	0.63"	135°	2.43"	35°	0.95
40°	0.72"	140°	2.52"	40°	1.08
45°	0.81"	145°	2.61"	45°	1.22
50°	0.90"	150°	2.70"	50°	1.35
55°	0.99"	155°	2.79"	55°	1.49
60°	1.08"	160°	2.88"	60°	1.62
65°	1.17"	165°	2.97"	65°	1.76
70°	1.26"	170°	3.06"	70°	1.89
75°	1.35"	175°	3.15"	75°	2.03
80°	1.44"	180°	3.24"	80°	2.16
85°	1.53"	185°	3.33"	85°	2.30
90°	1.62"	190°	3.42"	90°	2.43
95°	1.71"	195°	3.51"	95°	2.57
100°	1.80"	200°	3.60"	100°	2.70

Straight Socket Connection (with adhesive) can be used for various applications:

- Below Ground, Direct Buried, Water Tight Joint
- Below Ground, Concrete Encased
- Under Bridge and Above Ground installations

Conduit Joining System



Straight Socket Joint

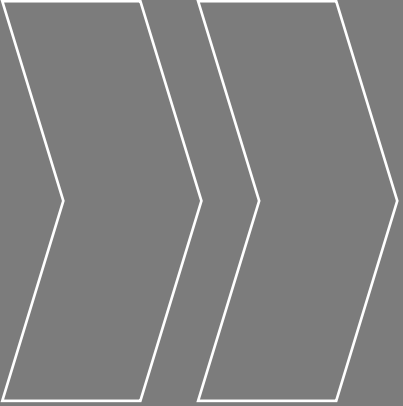
The Straight Socket Joint connection can be used for above and below ground applications.

Some features of the Straight Socket Joint connection are:

- Consists of bell and spigot.
- Spigot easily slides into belled end.
- Intended for use with Champion Mix® epoxy adhesive.
- High pull-out strength.
- Concrete tight and water tight joint.
- Straight Socket joining system is provided with all diameters of XW conduits.

To learn more about how to assemble the Straight Socket Joint connection, please see the installation video on our website.

XW



CONDUIT

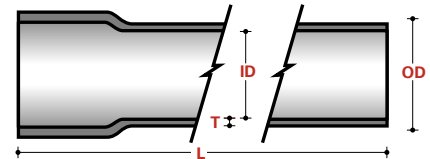
In this section:

XW (Extra Heavy Wall) type conduit is primarily used for Class I, Division 2 hazardous location applications or installations requiring severe impact strength. Many wastewater treatment plants utilize XW type conduit for its corrosion resistance and Class I, Division 2 capabilities, while utility companies utilize XW to protect their fiber-optic cables in above ground and under bridge applications. XW conduit can be used in areas that are susceptible to damage per NEC Article 355.10F. XW conduit is an ID (Inside Diameter)-sized conduit which has a .250" wall thickness and has been shown to stop a .45 caliber bullet at 20 ft. All XW conduit sizes are supplied with the Straight Socket connection.

Conduit Straight Lengths

STRAIGHT SOCKET (XW)

	NOMINAL SIZE	XW ITEM NO		UL/CSA LISTED	OUTSIDE DIAMETER		MIN. INSIDE DIAMETER	NOMINAL WALL THICKNESS* (T)	LENGTH (L)		WEIGHT	
		BELOW GROUND	ABOVE GROUND		AVERAGE	TOLERANCE					LBS/FT	KG/M
		TYPE XW (EXTRA HEAVY WALL) INCHES (METRIC)										
<input type="checkbox"/>	3/4" (19)	07A-XW-10S	07C-XW-10-S	Yes	1.410" (36)	+0.056" (1.4) -0.036" (0.9)	0.910" (23)	.25" (6)	10' (3m)		0.61 (0.91)	
<input type="checkbox"/>	1" (25)	10A-XW-10S	10C-XW-10-S	Yes	1.675" (43)	+0.056" (1.4) -0.036" (0.9)	1.175" (30)	.25" (6)	10' (3m)		0.68 (1.01)	
<input type="checkbox"/>	1-1/4" (32)	12A-XW-20-S	12C-XW-20-S	Yes	2.020" (51)	+0.056" (1.4) -0.036" (0.9)	1.520" (39)	.25" (6)	20' (6.1m)		0.82 (1.22)	
<input type="checkbox"/>	1-1/2" (38)	15A-XW-20-S	15C-XW-20-S	Yes	2.260" (57)	+0.056" (1.4) -0.036" (0.9)	1.760" (45)	.25" (6)	20' (6.1m)		1.18 (1.76)	
<input type="checkbox"/>	2" (51)	20B-XW-20-S	20D-XW-20-S	Yes	2.500" (64)	+0.056" (1.4) -0.036" (0.9)	2.000" (51)	.25" (6)	20' (6.1m)		1.26 (1.88)	
<input type="checkbox"/>	2-1/2" (64)	25B-XW-20-S	25D-XW-20-S	Yes	3.000" (76)	+0.056" (1.4) -0.036" (0.9)	2.500" (64)	.25" (6)	20' (6.1m)		1.54 (2.29)	
<input type="checkbox"/>	3" (76)	30B-XW-20-S	30D-XW-20-S	Yes	3.500" (89)	+0.056" (1.4) -0.036" (0.9)	3.000" (76)	.25" (6)	20' (6.1m)		1.82 (2.71)	
<input type="checkbox"/>	3-1/2" (89)	35B-XW-20-S	35D-XW-20-S	Yes	4.000" (102)	+0.056" (1.4) -0.036" (0.9)	3.500" (89)	.25" (6)	20' (6.1m)		2.10 (3.13)	
<input type="checkbox"/>	4" (102)	40B-XW-20-S	40D-XW-20-S	Yes	4.500" (114)	+0.056" (1.4) -0.036" (0.9)	4.000" (102)	.25" (6)	20' (6.1m)		2.38 (3.54)	
<input type="checkbox"/>	5" (127)	50B-XW-20-S	50D-XW-20-S	Yes	5.500" (140)	+0.056" (1.4) -0.036" (0.9)	5.000" (127)	.25" (6)	20' (6.1m)		2.94 (4.38)	
<input type="checkbox"/>	6" (152)	60B-XW-20-S	60D-XW-20-S	Yes	6.500" (165)	+0.056" (1.4) -0.036" (0.9)	6.000" (152)	.25" (6)	20' (6.1m)		3.50 (5.21)	
<input type="checkbox"/>	8" (203)	80A-XW-20-S	80C-XW-20-S	-	8.900" (226)	+0.056" (1.4) -0.036" (0.9)	8.400" (213)	.25" (6)	20' (6.1m)		4.80 (7.14)	
<input type="checkbox"/>	10" (254)	100B-XW-20-S	100D-XW-20-S	-	10.500" (267)	+0.056" (1.4) -0.036" (0.9)	10.000" (254)	.25" (6)	20' (6.1m)		5.74 (8.54)	
<input type="checkbox"/>	12" (305)	120B-XW-20-S	120D-XW-20-S	-	12.500" (318)	+0.056" (1.4) -0.036" (0.9)	12.000" (305)	.25" (6)	20' (6.1m)		6.86 (10.21)	

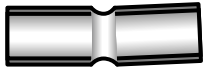


*Actual wall thickness is that required to meet the performance requirements for specifications. Other wall thicknesses are available by special request.

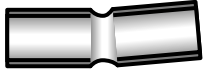


Elbows

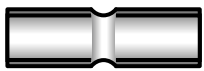
ELBOWS WITH BONDED ON PVC COUPLINGS



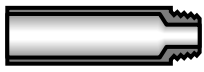
2-1/2° PVC Deep Socket Coupling



5° PVC Deep Socket Coupling



Straight PVC Deep Socket Coupling



Male Adapters (PVC or Fiberglass)



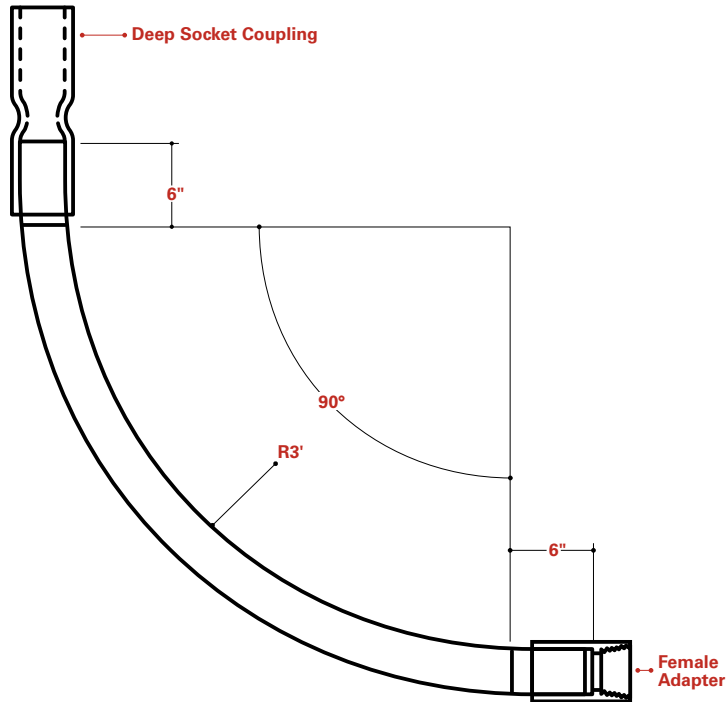
Female Adapters (PVC or Fiberglass)



PVC Stubs



Deep Socket PVC Coupling bonded onto fiberglass elbow



Elbow with deep socket coupling and female adapter

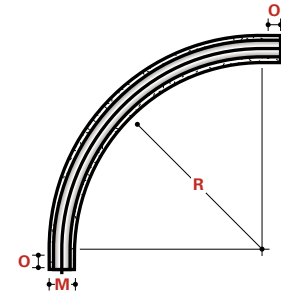
Elbows can be supplied with one or two PVC bonded couplings. Replace "-P" suffix with: "-1D" for one coupling or "-2D" for two couplings. Champion elbows can also be supplied with 2-1/2° or 5° PVC offset couplings to correct conduit field misalignments. Contact Champion Fiberglass for pricing and item numbers on elbows with fiberglass PVC male and female adapters.

XW 90° STANDARD RADIUS ELBOWS

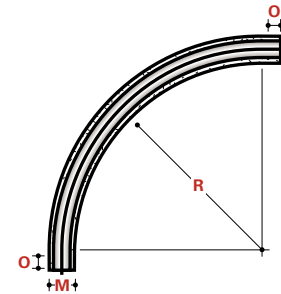
	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT			
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG		
<input type="checkbox"/>	3/4"	XW	07A-XW-9SR-P	07C-XW-9SR-P	1.41"	(36)	6"	(152)	4.50"	(114)	0.98	(0.4)
<input type="checkbox"/>	1"	XW	10A-XW-9SR-P	10C-XW-9SR-P	1.68"	(43)	6"	(152)	5.75"	(146)	1.19	(0.5)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-9SR-P	12C-XW-9SR-P	2.02"	(51)	6"	(152)	7.25"	(184)	1.62	(0.7)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-9SR-P	15C-XW-9SR-P	2.26"	(57)	6"	(152)	8.25"	(210)	2.42	(1.1)
<input type="checkbox"/>	2"	XW	20B-XW-9SR-P	20D-XW-9SR-P	2.50"	(65)	6"	(152)	9.50"	(241)	2.87	(1.3)

Standard radius elbows are available in 11-1/4°, 22-1/2°, 30° and 45° bends as well. Please contact Champion Fiberglass for additional information regarding pricing, dimensions, weights and item numbers.

Contact Champion Fiberglass for pricing and item numbers on elbows with fiberglass PVC male and female adapters.



90° elbows



90° x 12"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT			
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG		
<input type="checkbox"/>	3/4"	XW	07A-XW-90-P	07C-XW-90-P	1.41"	(36)	6"	(152)	12"	(305)	1.52	(0.69)
<input type="checkbox"/>	1"	XW	10A-XW-90-P	10C-XW-90-P	1.68"	(43)	6"	(152)	12"	(305)	1.70	(0.77)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-90-P	12C-XW-90-P	2.02"	(51)	6"	(152)	12"	(305)	2.05	(0.93)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-90-P	15C-XW-90-P	2.26"	(57)	6"	(152)	12"	(305)	2.95	(1.34)
<input type="checkbox"/>	2"	XW	20B-XW-90-P	20D-XW-90-P	2.50"	(63)	6"	(152)	12"	(305)	3.15	(1.43)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-90-P	25D-XW-90-P	3.00"	(76)	6"	(152)	12"	(305)	3.85	(1.75)
<input type="checkbox"/>	3"	XW	30B-XW-90-P	30D-XW-90-P	3.50"	(89)	6"	(152)	12"	(305)	4.55	(2.06)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-90-P	35D-XW-90-P	4.00"	(102)	6"	(152)	12"	(305)	5.25	(2.38)



90° x 24"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-91-P	07C-XW-91-P	1.41"	(36)	6" (152)	24" (610)	2.54	(1.15)
<input type="checkbox"/>	1"	XW	10A-XW-91-P	10C-XW-91-P	1.68"	(43)	6" (152)	24" (610)	2.83	(1.29)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-91-P	12C-XW-91-P	2.02"	(51)	6" (152)	24" (610)	3.42	(1.55)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-91-P	15C-XW-91-P	2.26"	(57)	6" (152)	24" (610)	4.92	(2.23)
<input type="checkbox"/>	2"	XW	20B-XW-91-P	20D-XW-91-P	2.50"	(65)	6" (152)	24" (610)	5.25	(2.38)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-91-P	25D-XW-91-P	3.00"	(76)	6" (152)	24" (610)	6.42	(2.92)
<input type="checkbox"/>	3"	XW	30B-XW-91-P	30D-XW-91-P	3.50"	(89)	6" (152)	24" (610)	7.58	(3.44)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-91-P	35D-XW-91-P	4.00"	(102)	6" (152)	24" (610)	8.76	(3.98)
<input type="checkbox"/>	4"	XW	40B-XW-91-P	40D-XW-91-P	4.50"	(114)	6" (152)	24" (610)	9.92	(4.50)

90° x 36"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-92-P	07C-XW-92-P	1.41"	(36)	6" (152)	36" (914)	3.46	(1.57)
<input type="checkbox"/>	1"	XW	10A-XW-92-P	10C-XW-92-P	1.68"	(43)	6" (152)	36" (914)	3.85	(1.75)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-92-P	12C-XW-92-P	2.02"	(51)	6" (152)	36" (914)	4.65	(2.11)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-92-P	15C-XW-92-P	2.26"	(57)	6" (152)	36" (914)	6.69	(3.04)
<input type="checkbox"/>	2"	XW	20B-XW-92-P	20D-XW-92-P	2.50"	(65)	6" (152)	36" (914)	7.14	(3.24)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-92-P	25D-XW-92-P	3.00"	(76)	6" (152)	36" (914)	8.73	(3.96)
<input type="checkbox"/>	3"	XW	30B-XW-92-P	30D-XW-92-P	3.50"	(89)	6" (152)	36" (914)	10.31	(4.68)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-92-P	35D-XW-92-P	4.00"	(102)	6" (152)	36" (914)	11.90	(5.40)
<input type="checkbox"/>	4"	XW	40B-XW-92-P	40D-XW-92-P	4.50"	(114)	6" (152)	36" (914)	13.49	(6.12)
<input type="checkbox"/>	5"	XW	50B-XW-92-P	50D-XW-92-P	5.50"	(140)	6" (152)	36" (914)	16.79	(7.56)
<input type="checkbox"/>	6"	XW	60B-XW-92-P	60D-XW-92-P	6.50"	(165)	6" (152)	36" (914)	19.99	(9.00)

90° x 48"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-93-P	07C-XW-93-P	1.41"	(36)	6" (152)	48" (1,219)	4.48	(2.03)
<input type="checkbox"/>	1"	XW	10A-XW-93-P	10C-XW-93-P	1.68"	(43)	6" (152)	48" (1,219)	4.90	(2.22)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-93-P	12C-XW-93-P	2.02"	(51)	6" (152)	48" (1,219)	6.75	(3.06)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-93-P	15C-XW-93-P	2.26"	(57)	6" (152)	48" (1,219)	9.78	(4.43)
<input type="checkbox"/>	2"	XW	20B-XW-93-P	20D-XW-93-P	2.50"	(65)	6" (152)	48" (1,219)	10.08	(4.58)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-93-P	25D-XW-93-P	3.00"	(76)	6" (152)	48" (1,219)	12.32	(5.59)
<input type="checkbox"/>	3"	XW	30B-XW-93-P	30D-XW-93-P	3.50"	(89)	6" (152)	48" (1,219)	14.56	(6.61)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-93-P	35D-XW-93-P	4.00"	(102)	6" (152)	48" (1,219)	16.80	(7.63)
<input type="checkbox"/>	4"	XW	40B-XW-93-P	40D-XW-93-P	4.50"	(114)	6" (152)	48" (1,219)	19.04	(8.64)
<input type="checkbox"/>	5"	XW	50B-XW-93-P	50D-XW-93-P	5.50"	(140)	6" (152)	48" (1,219)	23.52	(10.68)
<input type="checkbox"/>	6"	XW	60B-XW-93-P	60D-XW-93-P	6.50"	(165)	6" (152)	48" (1,219)	28.00	(12.71)

ELBOWS (XW)

90° x 60"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-94-P	07C-XW-94-P	1.41" (36)	6" (152)	60" (1,524)	4.96	(2.25)
<input type="checkbox"/>	1"	XW	10A-XW-94-P	10C-XW-94-P	1.68" (43)	6" (152)	60" (1,524)	5.56	(2.52)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-94-P	12C-XW-94-P	2.02" (51)	6" (152)	60" (1,524)	6.72	(3.05)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-94-P	15C-XW-94-P	2.26" (57)	6" (152)	60" (1,524)	9.67	(4.39)
<input type="checkbox"/>	2"	XW	20B-XW-94-P	20D-XW-94-P	2.50" (65)	6" (152)	60" (1,524)	11.13	(5.05)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-94-P	25D-XW-94-P	3.00" (76)	6" (152)	60" (1,524)	13.61	(6.18)
<input type="checkbox"/>	3"	XW	30B-XW-94-P	30D-XW-94-P	3.50" (89)	6" (152)	60" (1,524)	16.08	(7.30)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-94-P	35D-XW-94-P	4.00" (102)	6" (152)	60" (1,524)	18.55	(8.42)
<input type="checkbox"/>	4"	XW	40B-XW-94-P	40D-XW-94-P	4.50" (114)	6" (152)	60" (1,524)	21.02	(9.54)
<input type="checkbox"/>	5"	XW	50B-XW-94-P	50D-XW-94-P	5.50" (140)	6" (152)	60" (1,524)	25.97	(11.79)
<input type="checkbox"/>	6"	XW	60B-XW-94-P	60D-XW-94-P	6.50" (165)	6" (152)	60" (1,524)	30.92	(14.04)



45° x 12"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-80-P	07C-XW-80-P	1.41" (36)	6" (152)	12" (305)	1.07	(0.48)
<input type="checkbox"/>	1"	XW	10A-XW-80-P	10C-XW-80-P	1.68" (43)	6" (152)	12" (305)	1.19	(0.54)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-80-P	12C-XW-80-P	2.02" (51)	6" (152)	12" (305)	1.44	(0.65)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-80-P	15C-XW-80-P	2.26" (57)	6" (152)	12" (305)	2.07	(0.94)
<input type="checkbox"/>	2"	XW	20B-XW-80-P	20D-XW-80-P	2.50" (63)	6" (152)	12" (305)	2.21	(1.00)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-80-P	25D-XW-80-P	3.00" (76)	6" (152)	12" (305)	2.70	(1.22)
<input type="checkbox"/>	3"	XW	30B-XW-80-P	30D-XW-80-P	3.50" (89)	6" (152)	12" (305)	2.89	(1.31)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-80-P	35D-XW-80-P	4.00" (102)	6" (152)	12" (305)	3.68	(1.67)

45° x 24"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-81-P	07C-XW-81-P	1.41" (36)	6" (152)	24" (610)	1.52	(0.69)
<input type="checkbox"/>	1"	XW	10A-XW-81-P	10C-XW-81-P	1.68" (43)	6" (152)	24" (610)	1.70	(0.77)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-81-P	12C-XW-81-P	2.02" (51)	6" (152)	24" (610)	2.05	(0.93)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-81-P	15C-XW-81-P	2.26" (57)	6" (152)	24" (610)	2.95	(1.34)
<input type="checkbox"/>	2"	XW	20B-XW-81-P	20D-XW-81-P	2.50" (65)	6" (152)	24" (610)	3.15	(1.43)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-81-P	25D-XW-81-P	3.00" (76)	6" (152)	24" (610)	3.85	(1.75)
<input type="checkbox"/>	3"	XW	30B-XW-81-P	30D-XW-81-P	3.50" (89)	6" (152)	24" (610)	4.55	(2.07)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-81-P	35D-XW-81-P	4.00" (102)	6" (152)	24" (610)	5.24	(2.38)
<input type="checkbox"/>	4"	XW	40B-XW-81-P	40D-XW-81-P	4.50" (114)	6" (152)	24" (610)	5.95	(2.70)



45° x 36"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-82-P	07C-XW-82-P	1.41"	(36)	6" (152)	36" (914)	2.03	(0.92)
<input type="checkbox"/>	1"	XW	10A-XW-82-P	10C-XW-82-P	1.68"	(43)	6" (152)	36" (914)	2.27	(1.03)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-82-P	12C-XW-82-P	2.02"	(51)	6" (152)	36" (914)	2.73	(1.24)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-82-P	15C-XW-82-P	2.26"	(57)	6" (152)	36" (914)	3.93	(1.78)
<input type="checkbox"/>	2"	XW	20B-XW-82-P	20D-XW-82-P	2.50"	(65)	6" (152)	36" (914)	4.20	(1.91)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-82-P	25D-XW-82-P	3.00"	(76)	6" (152)	36" (914)	5.13	(2.33)
<input type="checkbox"/>	3"	XW	30B-XW-82-P	30D-XW-82-P	3.50"	(89)	6" (152)	36" (914)	6.07	(2.76)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-82-P	35D-XW-82-P	4.00"	(102)	6" (152)	36" (914)	6.99	(3.18)
<input type="checkbox"/>	4"	XW	40B-XW-82-P	40D-XW-82-P	4.59"	(114)	6" (152)	36" (914)	7.93	(3.60)
<input type="checkbox"/>	5"	XW	50B-XW-82-P	50D-XW-82-P	5.50"	(140)	6" (152)	36" (914)	9.79	(4.44)
<input type="checkbox"/>	6"	XW	60B-XW-82-P	60D-XW-82-P	6.50"	(165)	6" (152)	36" (914)	11.65	(5.29)

45° x 48"

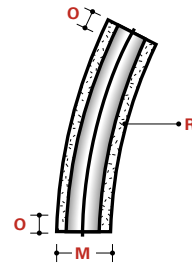
	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-83-P	07C-XW-83-P	1.41"	(36)	6" (152)	48" (1,219)	4.48	(2.03)
<input type="checkbox"/>	1"	XW	10A-XW-83-P	10C-XW-83-P	1.68"	(43)	6" (152)	48" (1,219)	4.90	(2.22)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-83-P	12C-XW-83-P	2.02"	(51)	6" (152)	48" (1,219)	6.75	(3.06)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-83-P	15C-XW-83-P	2.26"	(57)	6" (152)	48" (1,219)	9.78	(4.43)
<input type="checkbox"/>	2"	XW	20B-XW-83-P	20D-XW-83-P	2.50"	(65)	6" (152)	48" (1,219)	5.15	(2.34)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-83-P	25D-XW-83-P	3.00"	(76)	6" (152)	48" (1,219)	6.29	(2.85)
<input type="checkbox"/>	3"	XW	30B-XW-83-P	30D-XW-83-P	3.50"	(89)	6" (152)	48" (1,219)	7.43	(3.37)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-83-P	35D-XW-83-P	4.00"	(102)	6" (152)	48" (1,219)	8.57	(3.89)
<input type="checkbox"/>	4"	XW	40B-XW-83-P	40D-XW-83-P	4.50"	(114)	6" (152)	48" (1,219)	9.72	(4.41)
<input type="checkbox"/>	5"	XW	50B-XW-83-P	50D-XW-83-P	5.50"	(140)	6" (152)	48" (1,219)	12.01	(5.45)
<input type="checkbox"/>	6"	XW	60B-XW-83-P	60D-XW-83-P	6.50"	(165)	6" (152)	48" (1,219)	14.29	(6.49)

45° x 60"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-84-P	07C-XW-84-P	1.41"	(36)	6" (152)	60" (1,524)	2.77	(1.25)
<input type="checkbox"/>	1"	XW	10A-XW-84-P	10C-XW-84-P	1.68"	(43)	6" (152)	60" (1,524)	3.15	(1.43)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-84-P	12C-XW-84-P	2.02"	(51)	6" (152)	60" (1,524)	3.78	(1.72)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-84-P	15C-XW-84-P	2.26"	(57)	6" (152)	60" (1,524)	5.41	(2.46)
<input type="checkbox"/>	2"	XW	20B-XW-84-P	20D-XW-84-P	2.50"	(65)	6" (152)	60" (1,524)	6.30	(2.86)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-84-P	25D-XW-84-P	3.00"	(76)	6" (152)	60" (1,524)	7.70	(3.50)
<input type="checkbox"/>	3"	XW	30B-XW-84-P	30D-XW-84-P	3.50"	(89)	6" (152)	60" (1,524)	9.10	(4.13)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-84-P	35D-XW-84-P	4.00"	(102)	6" (152)	60" (1,524)	10.50	(4.77)
<input type="checkbox"/>	4"	XW	40B-XW-84-P	40D-XW-84-P	4.50"	(114)	6" (152)	60" (1,524)	11.90	(5.40)
<input type="checkbox"/>	5"	XW	50B-XW-84-P	50D-XW-84-P	5.50"	(140)	6" (152)	60" (1,524)	14.70	(6.67)
<input type="checkbox"/>	6"	XW	60B-XW-84-P	60D-XW-84-P	6.50"	(165)	6" (152)	60" (1,524)	17.50	(7.94)

ELBOWS (XW)

30°
elbows



30° x 12"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-70-P	07C-XW-70-P	1.41" (36)	6" (152)	12" (305)	0.97	(0.44)
<input type="checkbox"/>	1"	XW	10A-XW-70-P	10C-XW-70-P	1.68" (43)	6" (152)	12" (305)	1.08	(0.49)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-70-P	12C-XW-70-P	2.02" (51)	6" (152)	12" (305)	1.30	(0.59)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-70-P	15C-XW-70-P	2.26" (57)	6" (152)	12" (305)	1.87	(0.85)
<input type="checkbox"/>	2"	XW	20B-XW-70-P	20D-XW-70-P	2.50" (63)	6" (152)	12" (305)	2.00	(0.91)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-70-P	25D-XW-70-P	3.00" (76)	6" (152)	12" (305)	2.44	(1.11)
<input type="checkbox"/>	3"	XW	30B-XW-70-P	30D-XW-70-P	3.50" (89)	6" (152)	12" (305)	2.89	(1.31)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-70-P	35D-XW-70-P	4.00" (102)	6" (152)	12" (305)	3.33	(1.51)

30° x 24"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-71-P	07C-XW-71-P	1.41" (36)	6" (152)	24" (610)	1.22	(0.55)
<input type="checkbox"/>	1"	XW	10A-XW-71-P	10C-XW-71-P	1.68" (43)	6" (152)	24" (610)	1.36	(0.62)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-71-P	12C-XW-71-P	2.02" (51)	6" (152)	24" (610)	1.64	(0.74)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-71-P	15C-XW-71-P	2.26" (57)	6" (152)	24" (610)	2.36	(1.07)
<input type="checkbox"/>	2"	XW	20B-XW-71-P	20D-XW-71-P	2.50" (65)	6" (152)	24" (610)	2.52	(1.14)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-71-P	25D-XW-71-P	3.00" (76)	6" (152)	24" (610)	3.08	(1.40)
<input type="checkbox"/>	3"	XW	30B-XW-71-P	30D-XW-71-P	3.50" (89)	6" (152)	24" (610)	3.72	(1.69)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-71-P	35D-XW-71-P	4.00" (102)	6" (152)	24" (610)	4.30	(1.95)
<input type="checkbox"/>	4"	XW	40B-XW-71-P	40D-XW-71-P	4.50" (114)	6" (152)	24" (610)	4.87	(2.21)

30° x 36"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-72-P	07C-XW-72-P	1.41" (36)	6" (152)	36" (914)	1.52	(0.69)
<input type="checkbox"/>	1"	XW	10A-XW-72-P	10C-XW-72-P	1.68" (43)	6" (152)	36" (914)	1.70	(0.77)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-72-P	12C-XW-72-P	2.02" (51)	6" (152)	36" (914)	2.05	(0.93)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-72-P	15C-XW-72-P	2.26" (57)	6" (152)	36" (914)	2.95	(1.34)
<input type="checkbox"/>	2"	XW	20B-XW-72-P	20D-XW-72-P	2.50" (65)	6" (152)	36" (914)	3.15	(1.43)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-72-P	25D-XW-72-P	3.00" (76)	6" (152)	36" (914)	3.85	(1.75)
<input type="checkbox"/>	3"	XW	30B-XW-72-P	30D-XW-72-P	3.50" (89)	6" (152)	36" (914)	4.55	(2.07)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-72-P	35D-XW-72-P	4.00" (102)	6" (152)	36" (914)	5.25	(2.38)
<input type="checkbox"/>	4"	XW	40B-XW-72-P	40D-XW-72-P	4.50" (114)	6" (152)	36" (914)	5.95	(2.70)
<input type="checkbox"/>	5"	XW	50B-XW-72-P	50D-XW-72-P	5.50" (140)	6" (152)	36" (914)	7.35	(3.34)
<input type="checkbox"/>	6"	XW	60B-XW-72-P	60D-XW-72-P	6.50" (165)	6" (152)	36" (914)	8.75	(3.97)



30° x 48"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT		
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG	
<input type="checkbox"/>	3/4"	XW	07A-XW-73-P	07C-XW-73-P	1.41"	(36)	6"	(152)	48"	(1,219)	1.90 (0.86)
<input type="checkbox"/>	1"	XW	10A-XW-73-P	10C-XW-73-P	1.68"	(43)	6"	(152)	48"	(1,219)	2.17 (0.98)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-73-P	12C-XW-73-P	2.02"	(51)	6"	(152)	48"	(1,219)	2.63 (1.20)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-73-P	15C-XW-73-P	2.26"	(57)	6"	(152)	48"	(1,219)	3.77 (1.71)
<input type="checkbox"/>	2"	XW	20B-XW-73-P	20D-XW-73-P	2.50"	(65)	6"	(152)	48"	(1,219)	3.89 (1.77)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-73-P	25D-XW-73-P	3.00"	(76)	6"	(152)	48"	(1,219)	4.75 (2.16)
<input type="checkbox"/>	3"	XW	30B-XW-73-P	30D-XW-73-P	3.50"	(89)	6"	(152)	48"	(1,219)	5.61 (2.55)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-73-P	35D-XW-73-P	4.00"	(102)	6"	(152)	48"	(1,219)	6.47 (2.94)
<input type="checkbox"/>	4-1/2"	XW	40B-XW-73-P	40D-XW-73-P	4.50"	(114)	6"	(152)	48"	(1,219)	7.34 (3.33)
<input type="checkbox"/>	5"	XW	50B-XW-73-P	50D-XW-73-P	5.50"	(140)	6"	(152)	48"	(1,219)	9.07 (4.12)
<input type="checkbox"/>	6"	XW	60B-XW-73-P	60D-XW-73-P	6.50"	(165)	6"	(152)	48"	(1,219)	10.79 (4.90)

30° x 60"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT		
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG	
<input type="checkbox"/>	3/4"	XW	07A-XW-74-P	07C-XW-74-P	1.41"	(36)	6"	(152)	60"	(1,524)	2.02 (0.91)
<input type="checkbox"/>	1"	XW	10A-XW-74-P	10C-XW-74-P	1.68"	(43)	6"	(152)	60"	(1,524)	2.26 (1.03)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-74-P	12C-XW-74-P	2.02"	(51)	6"	(152)	60"	(1,524)	2.72 (1.23)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-74-P	15C-XW-74-P	2.26"	(57)	6"	(152)	60"	(1,524)	3.92 (1.77)
<input type="checkbox"/>	2"	XW	20B-XW-74-P	20D-XW-74-P	2.50"	(65)	6"	(152)	60"	(1,524)	4.52 (2.05)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-74-P	25D-XW-74-P	3.00"	(76)	6"	(152)	60"	(1,524)	5.52 (2.51)
<input type="checkbox"/>	3"	XW	30B-XW-74-P	30D-XW-74-P	3.50"	(89)	6"	(152)	60"	(1,524)	6.52 (2.96)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-74-P	35D-XW-74-P	4.00"	(102)	6"	(152)	60"	(1,524)	7.53 (3.42)
<input type="checkbox"/>	4"	XW	40B-XW-74-P	40D-XW-74-P	4.50"	(114)	6"	(152)	60"	(1,524)	8.53 (3.87)
<input type="checkbox"/>	5"	XW	50B-XW-74-P	50D-XW-74-P	5.50"	(140)	6"	(152)	60"	(1,524)	10.54 (4.79)
<input type="checkbox"/>	6"	XW	60B-XW-74-P	60D-XW-74-P	6.50"	(165)	6"	(152)	60"	(1,524)	12.55 (5.70)

22-1/2°
elbows





22-1/2° x 12"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT		
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG	
<input type="checkbox"/>	3/4"	XW	07A-XW-60-P	07C-XW-60-P	1.41"	(36)	6"	(152)	12"	(305)	0.87 (0.39)
<input type="checkbox"/>	1"	XW	10A-XW-60-P	10C-XW-60-P	1.68"	(43)	6"	(152)	12"	(305)	0.97 (0.44)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-60-P	12C-XW-60-P	2.02"	(51)	6"	(152)	12"	(305)	1.16 (0.53)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-60-P	15C-XW-60-P	2.26"	(57)	6"	(152)	12"	(305)	1.68 (0.76)
<input type="checkbox"/>	2"	XW	20B-XW-60-P	20D-XW-60-P	2.50"	(63)	6"	(152)	12"	(305)	1.79 (0.81)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-60-P	25D-XW-60-P	3.00"	(76)	6"	(152)	12"	(305)	2.19 (0.99)
<input type="checkbox"/>	3"	XW	30B-XW-60-P	30D-XW-60-P	3.50"	(89)	6"	(152)	12"	(305)	2.58 (1.17)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-60-P	35D-XW-60-P	4.00"	(102)	6"	(152)	12"	(305)	2.98 (1.35)

ELBOWS (XW)

22-1/2° x 24"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-61-P	07C-XW-61-P	1.41"	(36)	6" (152)	24" (610)	1.07	(0.48)
<input type="checkbox"/>	1"	XW	10A-XW-61-P	10C-XW-61-P	1.68"	(43)	6" (152)	24" (610)	1.19	(0.54)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-61-P	12C-XW-61-P	2.02"	(51)	6" (152)	24" (610)	1.44	(0.65)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-61-P	15C-XW-61-P	2.26"	(57)	6" (152)	24" (610)	2.07	(0.94)
<input type="checkbox"/>	2"	XW	20B-XW-61-P	20D-XW-61-P	2.50"	(65)	6" (152)	24" (610)	2.21	(1.00)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-61-P	25D-XW-61-P	3.00"	(76)	6" (152)	24" (610)	2.70	(1.23)
<input type="checkbox"/>	3"	XW	30B-XW-61-P	30D-XW-61-P	3.50"	(89)	6" (152)	24" (610)	3.32	(1.51)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-61-P	35D-XW-61-P	4.00"	(102)	6" (152)	24" (610)	3.83	(1.74)
<input type="checkbox"/>	4"	XW	40B-XW-61-P	40D-XW-61-P	4.50"	(114)	6" (152)	24" (610)	4.34	(1.97)

22-1/2° x 36"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-62-P	07C-XW-62-P	1.41"	(36)	6" (152)	36" (914)	1.27	(0.58)
<input type="checkbox"/>	1"	XW	10A-XW-62-P	10C-XW-62-P	1.68"	(43)	6" (152)	36" (914)	1.42	(0.64)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-62-P	12C-XW-62-P	2.02"	(51)	6" (152)	36" (914)	1.71	(0.77)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-62-P	15C-XW-62-P	2.26"	(57)	6" (152)	36" (914)	2.46	(1.12)
<input type="checkbox"/>	2"	XW	20B-XW-62-P	20D-XW-62-P	2.50"	(65)	6" (152)	36" (914)	2.63	(1.19)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-62-P	25D-XW-62-P	3.00"	(76)	6" (152)	36" (914)	3.21	(1.46)
<input type="checkbox"/>	3"	XW	30B-XW-62-P	30D-XW-62-P	3.50"	(89)	6" (152)	36" (914)	3.79	(1.72)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-62-P	35D-XW-62-P	4.00"	(102)	6" (152)	36" (914)	4.38	(1.99)
<input type="checkbox"/>	4"	XW	40B-XW-62-P	40D-XW-62-P	4.50"	(114)	6" (152)	36" (914)	4.96	(2.25)
<input type="checkbox"/>	5"	XW	50B-XW-62-P	50D-XW-62-P	5.50"	(140)	6" (152)	36" (914)	6.13	(2.78)
<input type="checkbox"/>	6"	XW	60B-XW-62-P	60D-XW-62-P	6.50"	(165)	6" (152)	36" (914)	7.29	(3.31)

22-1/2° x 48"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-63-P	07C-XW-63-P	1.41"	(36)	6" (152)	48" (1,219)	1.42	(0.64)
<input type="checkbox"/>	1"	XW	10A-XW-63-P	10C-XW-63-P	1.68"	(43)	6" (152)	48" (1,219)	1.59	(0.72)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-63-P	12C-XW-63-P	2.02"	(51)	6" (152)	48" (1,219)	1.92	(0.87)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-63-P	15C-XW-63-P	2.26"	(57)	6" (152)	48" (1,219)	2.75	(1.24)
<input type="checkbox"/>	2"	XW	20B-XW-63-P	20D-XW-63-P	2.50"	(65)	6" (152)	48" (1,219)	3.15	(1.43)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-63-P	25D-XW-63-P	3.00"	(76)	6" (152)	48" (1,219)	3.85	(1.75)
<input type="checkbox"/>	3"	XW	30B-XW-63-P	30D-XW-63-P	3.50"	(89)	6" (152)	48" (1,219)	4.55	(2.07)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-63-P	35D-XW-63-P	4.00"	(102)	6" (152)	48" (1,219)	5.25	(2.38)
<input type="checkbox"/>	4"	XW	40B-XW-63-P	40D-XW-63-P	4.50"	(114)	6" (152)	48" (1,219)	5.95	(2.70)
<input type="checkbox"/>	5"	XW	50B-XW-63-P	50D-XW-63-P	5.50"	(140)	6" (152)	48" (1,219)	7.35	(3.34)
<input type="checkbox"/>	6"	XW	60B-XW-63-P	60D-XW-63-P	6.50"	(165)	6" (152)	48" (1,219)	8.75	(3.97)



22-1/2° x 60"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-64-P	07C-XW-64-P	1.41" (36)	6" (152)	60" (1,524)	1.84	(0.83)
<input type="checkbox"/>	1"	XW	10A-XW-64-P	10C-XW-64-P	1.68" (43)	6" (152)	60" (1,524)	2.04	(0.93)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-64-P	12C-XW-64-P	2.02" (51)	6" (152)	60" (1,524)	2.50	(1.13)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-64-P	15C-XW-64-P	2.26" (57)	6" (152)	60" (1,524)	3.57	(1.62)
<input type="checkbox"/>	2"	XW	20B-XW-64-P	20D-XW-64-P	2.50" (65)	6" (152)	60" (1,524)	3.68	(1.67)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-64-P	25D-XW-64-P	3.00" (76)	6" (152)	60" (1,524)	4.50	(2.04)
<input type="checkbox"/>	3"	XW	30B-XW-64-P	30D-XW-64-P	3.50" (89)	6" (152)	60" (1,524)	5.31	(2.41)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-64-P	35D-XW-64-P	4.00" (102)	6" (152)	60" (1,524)	6.13	(2.78)
<input type="checkbox"/>	4-1/2"	XW	40B-XW-64-P	40D-XW-64-P	4.50" (114)	6" (152)	60" (1,524)	6.94	(3.15)
<input type="checkbox"/>	5"	XW	50B-XW-64-P	50D-XW-64-P	5.50" (140)	6" (152)	60" (1,524)	8.58	(3.90)
<input type="checkbox"/>	6"	XW	60B-XW-64-P	60D-XW-64-P	6.50" (165)	6" (152)	60" (1,524)	10.21	(4.64)



11-1/4° x 12"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-50-P	07C-XW-50-P	1.41" (36)	6" (152)	12" (305)	0.71	(0.32)
<input type="checkbox"/>	1"	XW	10A-XW-50-P	10C-XW-50-P	1.68" (43)	6" (152)	12" (305)	0.79	(0.36)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-50-P	12C-XW-50-P	2.02" (51)	6" (152)	12" (305)	0.96	(0.43)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-50-P	15C-XW-50-P	2.26" (57)	6" (152)	12" (305)	1.38	(0.63)
<input type="checkbox"/>	2"	XW	20B-XW-50-P	20D-XW-50-P	2.50" (63)	6" (152)	12" (305)	1.47	(0.67)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-50-P	25D-XW-50-P	3.00" (76)	6" (152)	12" (305)	1.80	(0.82)
<input type="checkbox"/>	3"	XW	30B-XW-50-P	30D-XW-50-P	4.00" (102)	6" (152)	12" (305)	2.45	(1.11)

11-1/4° x 24"

	NOMINAL		XW ITEM NO		M	O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-51-P	07C-XW-51-P	1.41" (36)	6" (152)	24" (610)	0.87	(0.39)
<input type="checkbox"/>	1"	XW	10A-XW-51-P	10C-XW-51-P	1.68" (43)	6" (152)	24" (610)	0.97	(0.44)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-51-P	12C-XW-51-P	2.02" (51)	6" (152)	24" (610)	1.16	(0.53)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-51-P	15C-XW-51-P	2.26" (57)	6" (152)	24" (610)	1.68	(0.76)
<input type="checkbox"/>	2"	XW	20B-XW-51-P	20D-XW-51-P	2.50" (63)	6" (152)	24" (610)	1.79	(0.81)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-51-P	25D-XW-51-P	3.00" (76)	6" (152)	24" (610)	2.19	(0.99)
<input type="checkbox"/>	3"	XW	30B-XW-51-P	30D-XW-51-P	3.50" (89)	6" (152)	24" (610)	2.58	(1.17)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-51-P	35D-XW-51-P	4.00" (102)	6" (152)	24" (610)	2.98	(1.35)
<input type="checkbox"/>	4"	XW	40B-XW-51-P	40D-XW-51-P	4.50" (114)	6" (152)	24" (610)	3.38	(1.53)

ELBOWS (XW)

11-1/4° x 36"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT		
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG	
<input type="checkbox"/>	3/4"	XW	07A-XW-52-P	07C-XW-52-P	1.41"	(36)	6"	(152)	36"	(914)	0.97 (0.44)
<input type="checkbox"/>	1"	XW	10A-XW-52-P	10C-XW-52-P	1.68"	(43)	6"	(152)	36"	(914)	1.08 (0.49)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-52-P	12C-XW-52-P	2.02"	(51)	6"	(152)	36"	(914)	1.30 (0.59)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-52-P	15C-XW-52-P	2.26"	(57)	6"	(152)	36"	(914)	1.87 (0.85)
<input type="checkbox"/>	2"	XW	20B-XW-52-P	20D-XW-52-P	2.50"	(64)	6"	(152)	36"	(914)	2.00 (0.91)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-52-P	25D-XW-52-P	3.00"	(76)	6"	(152)	36"	(914)	2.44 (1.11)
<input type="checkbox"/>	3"	XW	30B-XW-52-P	30D-XW-52-P	3.50"	(89)	6"	(152)	36"	(914)	2.88 (1.31)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-52-P	35D-XW-52-P	4.00"	(102)	6"	(152)	36"	(914)	3.33 (1.51)
<input type="checkbox"/>	4"	XW	40B-XW-52-P	40D-XW-52-P	4.50"	(114)	6"	(152)	36"	(914)	3.77 (3.77)
<input type="checkbox"/>	5"	XW	50B-XW-52-P	50D-XW-52-P	5.50"	(140)	6"	(152)	36"	(914)	4.64 (2.11)
<input type="checkbox"/>	6"	XW	60B-XW-52-P	60D-XW-52-P	6.50"	(165)	6"	(152)	36"	(914)	5.53 (2.51)

11-1/4° x 48"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT		
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG	
<input type="checkbox"/>	3/4"	XW	07A-XW-53-P	07C-XW-53-P	1.41"	(36)	6"	(152)	48"	(1,219)	1.00 (0.45)
<input type="checkbox"/>	1"	XW	10A-XW-53-P	10C-XW-53-P	1.68"	(43)	6"	(152)	48"	(1,219)	1.15 (0.52)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-53-P	12C-XW-53-P	2.02"	(51)	6"	(152)	48"	(1,219)	1.37 (0.62)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-53-P	15C-XW-53-P	2.26"	(57)	6"	(152)	48"	(1,219)	2.00 (0.91)
<input type="checkbox"/>	2"	XW	20B-XW-53-P	20D-XW-53-P	2.50"	(64)	6"	(152)	48"	(1,219)	2.29 (1.04)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-53-P	25D-XW-53-P	3.00"	(76)	6"	(152)	48"	(1,219)	2.83 (1.29)
<input type="checkbox"/>	3"	XW	30B-XW-53-P	30D-XW-53-P	3.50"	(89)	6"	(152)	48"	(1,219)	3.34 (1.51)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-53-P	35D-XW-53-P	4.00"	(102)	6"	(152)	48"	(1,219)	3.86 (1.75)
<input type="checkbox"/>	4"	XW	40B-XW-53-P	40D-XW-53-P	4.50"	(114)	6"	(152)	48"	(1,219)	4.38 (1.99)
<input type="checkbox"/>	5"	XW	50B-XW-53-P	50D-XW-53-P	5.50"	(140)	6"	(152)	48"	(1,219)	5.41 (2.46)
<input type="checkbox"/>	6"	XW	60B-XW-53-P	60D-XW-53-P	6.50"	(165)	6"	(152)	48"	(1,219)	6.44 (2.92)

11-1/4° x 60"

	NOMINAL		XW ITEM NO		M		O-TANGENT (MIN)	R-RADIUS (MIN)	WEIGHT		
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG	
<input type="checkbox"/>	3/4"	XW	07A-XW-54-P	07C-XW-54-P	1.41"	(36)	6"	(152)	60"	(1,524)	1.13 (0.51)
<input type="checkbox"/>	1"	XW	10A-XW-54-P	10C-XW-54-P	1.68"	(43)	6"	(152)	60"	(1,524)	1.26 (0.57)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-54-P	12C-XW-54-P	2.02"	(51)	6"	(152)	60"	(1,524)	1.52 (0.69)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-54-P	15C-XW-54-P	2.26"	(57)	6"	(152)	60"	(1,524)	2.18 (1.00)
<input type="checkbox"/>	2"	XW	20B-XW-54-P	20D-XW-54-P	2.50"	(65)	6"	(152)	60"	(1,524)	2.52 (1.44)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-54-P	25D-XW-54-P	3.00"	(76)	6"	(152)	60"	(1,524)	3.08 (1.40)
<input type="checkbox"/>	3"	XW	30B-XW-54-P	30D-XW-54-P	3.50"	(89)	6"	(152)	60"	(1,524)	3.64 (1.65)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-54-P	35D-XW-54-P	4.00"	(102)	6"	(152)	60"	(1,524)	4.20 (1.91)
<input type="checkbox"/>	4"	XW	40B-XW-54-P	40D-XW-54-P	4.50"	(114)	6"	(152)	60"	(1,524)	4.76 (2.16)
<input type="checkbox"/>	5"	XW	50B-XW-54-P	50D-XW-54-P	5.50"	(140)	6"	(152)	60"	(1,524)	5.88 (2.67)
<input type="checkbox"/>	6"	XW	60B-XW-54-P	60D-XW-54-P	6.50"	(165)	6"	(152)	60"	(1,524)	7.00 (3.18)



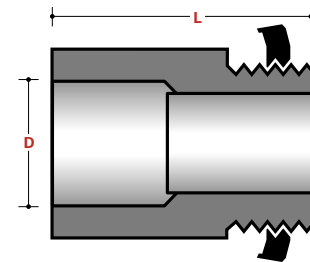
Fittings

BOX CONNECTOR

(Straight Threads)

	NOMINAL		XW ITEM NO		D		L		WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-30	07C-XW-30	1.435"	(36)	3"	(76)	0.11	(0.05)
<input type="checkbox"/>	1"	XW	10A-XW-30	10C-XW-30	1.700"	(43)	3"	(76)	0.22	(0.10)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-30	12C-XW-30	2.045"	(52)	3"	(76)	0.35	(0.16)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-30	15C-XW-30	2.285"	(58)	3"	(76)	0.49	(0.22)
<input type="checkbox"/>	2"	XW	20B-XW-30	20D-XW-30	2.520"	(64)	5"	(127)	0.85	(0.39)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-30	25D-XW-30	3.025"	(77)	5"	(127)	0.94	(0.43)
<input type="checkbox"/>	3"	XW	30B-XW-30	30D-XW-30	3.520"	(89)	5"	(127)	1.28	(0.58)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-30	35D-XW-30	4.025"	(102)	5"	(127)	1.77	(0.80)
<input type="checkbox"/>	4"	XW	40B-XW-30	40D-XW-30	4.520"	(115)	7"	(178)	2.09	(0.95)
<input type="checkbox"/>	5"	XW	50B-XW-30	50D-XW-30	5.520"	(140)	7"	(178)	2.75	(1.25)
<input type="checkbox"/>	6"	XW	60B-XW-30	60D-XW-30	6.520"	(166)	7"	(178)	2.97	(1.35)
<input type="checkbox"/>	8"	XW	80A-XW-30	80C-XW-30	8.920"	(227)	8"	(203)	5.24	(2.37)

A box connector creates a separable termination into a box. This connector has straight threads (NPT) and is supplied with a locknut. Sealing O-ring supplied by adding an "-EX" suffix to the item number.

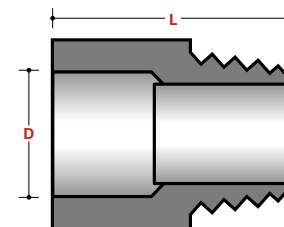


MALE ADAPTER

(Straight Threads)

	NOMINAL		XW ITEM NO		D		L		WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-33	07C-XW-33	1.435"	(36)	3"	(76)	0.09	(0.04)
<input type="checkbox"/>	1"	XW	10A-XW-33	10C-XW-33	1.700"	(43)	3"	(76)	0.19	(0.09)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-33	12C-XW-33	2.045"	(52)	3"	(76)	0.24	(0.11)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-33	15C-XW-33	2.285"	(58)	3"	(76)	0.35	(0.16)
<input type="checkbox"/>	2"	XW	20B-XW-33	20D-XW-33	2.520"	(64)	5"	(127)	0.69	(0.31)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-33	25D-XW-33	3.025"	(77)	5"	(127)	0.85	(0.38)
<input type="checkbox"/>	3"	XW	30B-XW-33	30D-XW-33	3.520"	(89)	5"	(127)	1.00	(0.45)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-33	35D-XW-33	4.025"	(102)	5"	(127)	1.28	(0.58)
<input type="checkbox"/>	4"	XW	40B-XW-33	40D-XW-33	4.520"	(115)	7"	(178)	1.56	(0.71)
<input type="checkbox"/>	5"	XW	50B-XW-33	50D-XW-33	5.520"	(140)	7"	(178)	2.08	(0.94)
<input type="checkbox"/>	6"	XW	60B-XW-33	60D-XW-33	6.520"	(166)	7"	(178)	2.47	(1.12)
<input type="checkbox"/>	8"	XW	80A-XW-33	80C-XW-33	8.920"	(227)	8"	(203)	5.29	(2.37)

Male adapters with straight threads (NPT) are generally used for joining to female threads of rigid steel, Myers-type hubs or terminating into precast iron boxes with female thread entrances.

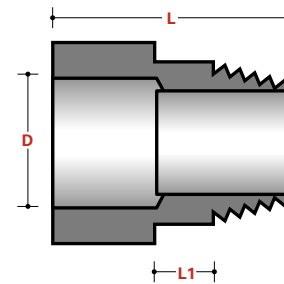


SPECIAL ADAPTER FOR PVC-COATED FITTINGS

(Male Adapter)

	NOMINAL		XW ITEM NO		D		L		L1		WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND							LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-24	07C-XW-24	1.435"	(36)	3.75"	(95)	0.75"	(18)	0.36	(0.16)
<input type="checkbox"/>	1"	XW	10A-XW-24	10C-XW-24	1.700"	(43)	4.00"	(102)	1.00"	(25)	0.50	(0.23)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-24	12C-XW-24	2.045"	(52)	4.25"	(108)	1.25"	(32)	0.60	(0.27)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-24	15C-XW-24	2.285"	(58)	4.50"	(114)	1.50"	(38)	0.90	(0.41)
<input type="checkbox"/>	2"	XW	20B-XW-24	20D-XW-24	2.520"	(64)	7.00"	(178)	2.00"	(51)	0.69	(0.31)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-24	25D-XW-24	3.025"	(77)	7.00"	(178)	2.00"	(51)	1.20	(0.45)
<input type="checkbox"/>	3"	XW	30B-XW-24	30D-XW-24	3.520"	(89)	7.00"	(178)	2.00"	(51)	1.00	(0.45)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-24	35D-XW-24	4.025"	(102)	7.00"	(178)	2.00"	(51)	1.20	(0.54)
<input type="checkbox"/>	4"	XW	40B-XW-24	40D-XW-24	4.520"	(115)	7.00"	(178)	2.00"	(51)	1.56	(0.71)
<input type="checkbox"/>	5"	XW	50B-XW-24	50D-XW-24	5.520"	(140)	7.00"	(178)	2.00"	(51)	2.08	(0.94)
<input type="checkbox"/>	6"	XW	60B-XW-24	60D-XW-24	6.520"	(166)	7.00"	(178)	2.00"	(51)	2.47	(1.12)

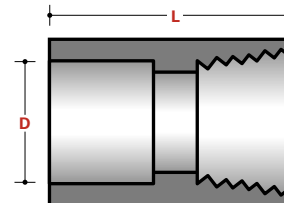
This terminal adapter has tapered threads and a straight shoulder so it can fit under the PVC sleeve of a PVC-coated steel fitting.



FEMALE ADAPTER

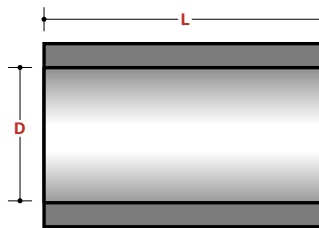
	NOMINAL		XW ITEM NO		D		L		WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND					LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-32	07C-XW-32	1.435"	(36)	3"	(76)	0.30	(0.14)
<input type="checkbox"/>	1"	XW	10A-XW-32	10C-XW-32	1.700"	(43)	3"	(76)	0.38	(0.17)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-32	12C-XW-32	2.045"	(52)	3"	(76)	0.45	(0.20)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-32	15C-XW-32	2.285"	(58)	3"	(76)	0.60	(0.27)
<input type="checkbox"/>	2"	XW	20B-XW-32	20D-XW-32	2.520"	(64)	5"	(127)	1.20	(0.55)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-32	25D-XW-32	3.025"	(77)	5"	(127)	0.85	(0.38)
<input type="checkbox"/>	3"	XW	30B-XW-32	30D-XW-32	3.520"	(89)	5"	(127)	1.40	(0.64)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-32	35D-XW-32	4.025"	(102)	5"	(127)	1.28	(0.58)
<input type="checkbox"/>	4"	XW	40B-XW-32	40D-XW-32	4.520"	(115)	7"	(178)	2.08	(0.94)
<input type="checkbox"/>	5"	XW	50B-XW-32	50D-XW-32	5.520"	(140)	7"	(178)	2.60	(1.18)
<input type="checkbox"/>	6"	XW	60B-XW-32	60D-XW-32	6.520"	(166)	7"	(178)	3.51	(1.59)

This adapter is generally used for joining fiberglass conduit with galvanized rigid steel (GRS) conduit. It has the same threads as GRS conduit and can easily be attached to GRS conduit.



SLEEVE COUPLING

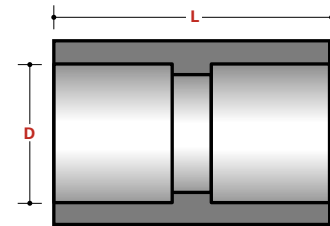
	NOMINAL		XW ITEM NO		D	L	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND			LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-42	07C-XW-42	1.435" (36)	6" (152)	0.22	(0.10)
<input type="checkbox"/>	1"	XW	10A-XW-42	10C-XW-42	1.700" (43)	6" (152)	0.29	(0.13)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-42	12C-XW-42	2.045" (52)	6" (152)	0.36	(0.16)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-42	15C-XW-42	2.285" (58)	6" (152)	0.39	(0.18)
<input type="checkbox"/>	2"	XW	20B-XW-42	20D-XW-42	2.520" (64)	10" (254)	0.88	(0.40)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-42	25D-XW-42	3.025" (77)	10" (254)	1.08	(0.49)
<input type="checkbox"/>	3"	XW	30B-XW-42	30D-XW-42	3.520" (89)	10" (254)	1.25	(0.57)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-42	35D-XW-42	4.025" (102)	10" (254)	1.87	(0.85)
<input type="checkbox"/>	4"	XW	40B-XW-42	40D-XW-42	4.520" (115)	10" (254)	1.50	(0.68)
<input type="checkbox"/>	5"	XW	50B-XW-42	50D-XW-42	5.520" (140)	10" (254)	2.08	(0.94)
<input type="checkbox"/>	6"	XW	60B-XW-42	60D-XW-42	6.520" (166)	10" (254)	2.50	(1.13)
<input type="checkbox"/>	8"	XW	80A-XW-42	80C-XW-42	8.920" (227)	10" (254)	3.00	(1.36)



STOP COUPLING

	NOMINAL		XW ITEM NO		D	L	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND			LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-40	07C-XW-40	1.435" (36)	6" (152)	0.22	(0.10)
<input type="checkbox"/>	1"	XW	10A-XW-40	10C-XW-40	1.700" (43)	6" (152)	0.29	(0.13)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-40	12C-XW-40	2.045" (52)	6" (152)	0.36	(0.16)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-40	15C-XW-40	2.285" (58)	6" (152)	0.39	(0.18)
<input type="checkbox"/>	2"	XW	20B-XW-40	20D-XW-40	2.520" (64)	10" (254)	0.88	(0.40)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-40	25D-XW-40	3.025" (77)	10" (254)	1.08	(0.49)
<input type="checkbox"/>	3"	XW	30B-XW-40	30D-XW-40	3.520" (89)	10" (254)	1.25	(0.57)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-40	35D-XW-40	4.025" (102)	10" (254)	1.87	(0.85)
<input type="checkbox"/>	4"	XW	40B-XW-40	40D-XW-40	4.520" (115)	10" (254)	2.00	(0.91)
<input type="checkbox"/>	5"	XW	50B-XW-40	50D-XW-40	5.520" (140)	10" (254)	2.50	(1.13)
<input type="checkbox"/>	6"	XW	60B-XW-40	60D-XW-40	6.520" (166)	10" (254)	2.90	(1.32)
<input type="checkbox"/>	8"	XW	80A-XW-40	80C-XW-40	8.920" (227)	10" (254)	3.00	(1.36)

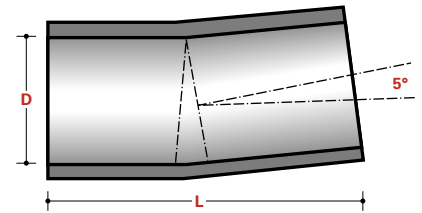
A stop coupling is sometimes referred to as a double bell coupling.



5° DOUBLE BELL COUPLING

	NOMINAL		XW ITEM NO		D	L		WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND		LBS	KG		
<input type="checkbox"/>	3/4"	XW	07A-XW-44	07C-XW-44	1.435" (36)	6"	(152)	0.22	(0.10)
<input type="checkbox"/>	1"	XW	10A-XW-44	10C-XW-44	1.700" (43)	6"	(152)	0.29	(0.13)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-44	12C-XW-44	2.045" (52)	6"	(152)	0.36	(0.16)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-44	15C-XW-44	2.285" (58)	6"	(152)	0.39	(0.18)
<input type="checkbox"/>	2"	XW	20B-XW-44	20D-XW-44	2.520" (64)	10"	(254)	0.92	(0.42)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-44	25D-XW-44	3.025" (77)	10"	(254)	1.28	(0.58)
<input type="checkbox"/>	3"	XW	30B-XW-44	30D-XW-44	3.520" (89)	10"	(254)	1.48	(0.67)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-44	35D-XW-44	4.025" (102)	10"	(254)	1.70	(0.77)
<input type="checkbox"/>	4"	XW	40B-XW-44	40D-XW-44	4.520" (115)	10"	(254)	1.53	(0.67)
<input type="checkbox"/>	5"	XW	50B-XW-44	50D-XW-44	5.520" (140)	10"	(254)	2.17	(0.98)
<input type="checkbox"/>	6"	XW	60B-XW-44	60D-XW-44	6.520" (166)	10"	(254)	2.55	(1.16)

Other angles can also be manufactured, such as 2.5° etc. Please contact Champion Fiberglass for consultation.



expansion joints

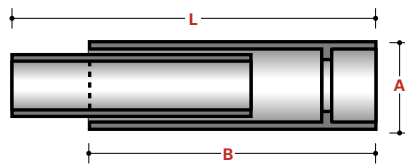
Installation of Expansion Joints:

- When the duct is shorter than 50 ft, no Expansion Joint needed.
- When the duct is between 50 ft up to 200 ft, install one Expansion Joint at the mid point.
- If the duct is longer than 200 ft, install one Expansion Joint every 200 ft apart.
- Expansion Joints should be located as close as possible to the quarter point of the conduit span.

Note: All Expansion Joints have a yellow line on the nipple end of the joint for proper installation.

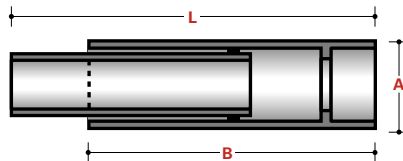
SINGLE EXPANSION JOINT SOCKET X SPIGOT, NO O-RING

	NOMINAL		XW ITEM NO ABOVE GROUND	A	B	L - MIN	L - MAX	WEIGHT	
	SIZE	TYPE						LBS	KG
<input type="checkbox"/>	3/4"	XW	07C-XW-34	1.935" (54)	12" (305)	16.5" (419)	24.5" (622)	1.40	(0.64)
<input type="checkbox"/>	1"	XW	10C-XW-34	2.200" (61)	12" (305)	16.5" (419)	24.5" (622)	1.57	(0.71)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-34	2.545" (65)	12" (305)	16.5" (419)	24.5" (622)	1.89	(0.86)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-34	2.785" (71)	12" (305)	16.5" (419)	24.5" (622)	2.72	(1.23)
<input type="checkbox"/>	2"	XW	20D-XW-34	3.000" (76)	12" (305)	20.5" (520)	28.5" (724)	2.90	(1.32)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-34	3.525" (90)	12" (305)	20.5" (520)	28.5" (724)	3.56	(1.61)
<input type="checkbox"/>	3"	XW	30D-XW-34	4.000" (102)	12" (305)	20.5" (520)	28.5" (724)	4.19	(1.90)
<input type="checkbox"/>	3-1/2"	XW	35D-XW-34	4.525" (115)	12" (305)	20.5" (520)	28.5" (724)	4.83	(2.19)
<input type="checkbox"/>	4"	XW	40D-XW-34	5.000" (127)	14" (356)	20.5" (520)	28.5" (724)	6.42	(2.92)
<input type="checkbox"/>	5"	XW	50D-XW-34	6.000" (152)	14" (356)	20.5" (520)	28.5" (724)	7.94	(3.60)
<input type="checkbox"/>	6"	XW	60D-XW-34	7.000" (178)	14" (356)	20.5" (520)	28.5" (724)	10.06	(4.57)
<input type="checkbox"/>	8"	XW	80C-XW-34	9.420" (239)	14" (356)	20.5" (520)	28.5" (724)	13.80	(6.27)



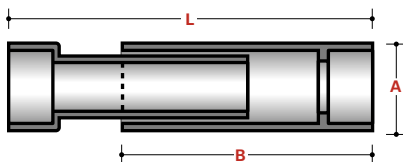
SINGLE EXPANSION JOINT SOCKET X SPIGOT WITH O-RING

	NOMINAL		XW ITEM NO ABOVE GROUND	A		B		L - MIN		L - MAX		WEIGHT	
	SIZE	TYPE								LBS	KG		
<input type="checkbox"/>	3/4"	XW	07C-XW-36	1.935"	(54)	12"	(305)	16.5"	(419)	24.5"	(622)	1.40	(0.64)
<input type="checkbox"/>	1"	XW	10C-XW-36	2.200"	(61)	12"	(305)	16.5"	(419)	24.5"	(622)	1.57	(0.71)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-36	2.545"	(65)	12"	(305)	16.5"	(419)	24.5"	(622)	1.89	(0.86)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-36	2.785"	(71)	12"	(305)	16.5"	(419)	24.5"	(622)	2.72	(1.23)
<input type="checkbox"/>	2"	XW	20D-XW-36	3.000"	(76)	12"	(305)	20.5"	(520)	28.5"	(724)	2.90	(1.32)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-36	3.525"	(90)	12"	(305)	20.5"	(520)	28.5"	(724)	3.56	(1.61)
<input type="checkbox"/>	3"	XW	30D-XW-36	4.000"	(102)	12"	(305)	20.5"	(520)	28.5"	(724)	4.19	(1.90)
<input type="checkbox"/>	3-1/2"	XW	35D-XW-36	4.525"	(115)	12"	(305)	20.5"	(520)	28.5"	(724)	4.83	(2.19)
<input type="checkbox"/>	4"	XW	40D-XW-36	5.000"	(127)	14"	(356)	20.5"	(520)	28.5"	(724)	6.42	(2.92)
<input type="checkbox"/>	5"	XW	50D-XW-36	6.000"	(152)	14"	(356)	20.5"	(520)	28.5"	(724)	7.94	(3.60)
<input type="checkbox"/>	6"	XW	60D-XW-36	7.000"	(178)	14"	(356)	20.5"	(520)	28.5"	(724)	10.06	(4.57)
<input type="checkbox"/>	8"	XW	80C-XW-36	8.000"	(203)	14"	(356)	20.5"	(520)	28.5"	(724)	12.75	(5.78)



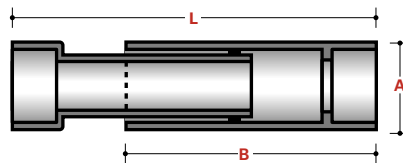
SINGLE EXPANSION JOINT SOCKET X SOCKET, NO O-RING

	NOMINAL		XW ITEM NO ABOVE GROUND	A		B		L - MIN		L - MAX		WEIGHT	
	SIZE	TYPE								LBS	KG		
<input type="checkbox"/>	3/4"	XW	07C-XW-35	1.935"	(54)	12"	(305)	16.5"	(419)	24.5"	(622)	1.76	(0.80)
<input type="checkbox"/>	1"	XW	10C-XW-35	2.200"	(61)	12"	(305)	16.5"	(419)	24.5"	(622)	1.97	(0.89)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-35	2.545"	(65)	12"	(305)	16.5"	(419)	24.5"	(622)	2.35	(1.07)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-35	2.785"	(71)	12"	(305)	16.5"	(419)	24.5"	(622)	2.72	(1.23)
<input type="checkbox"/>	2"	XW	20D-XW-35	3.000"	(76)	12"	(305)	20.5"	(520)	28.5"	(724)	3.62	(1.64)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-35	3.525"	(90)	12"	(305)	20.5"	(520)	28.5"	(724)	4.44	(2.01)
<input type="checkbox"/>	3"	XW	30D-XW-35	4.000"	(102)	12"	(305)	20.5"	(520)	28.5"	(724)	5.23	(2.37)
<input type="checkbox"/>	3-1/2"	XW	35D-XW-35	4.525"	(115)	12"	(305)	20.5"	(520)	28.5"	(724)	6.06	(2.75)
<input type="checkbox"/>	4"	XW	40D-XW-35	5.000"	(127)	14"	(356)	20.5"	(520)	28.5"	(724)	7.89	(3.58)
<input type="checkbox"/>	5"	XW	50D-XW-35	6.000"	(152)	14"	(356)	20.5"	(520)	28.5"	(724)	9.75	(4.43)
<input type="checkbox"/>	6"	XW	60D-XW-35	7.000"	(178)	14"	(356)	20.5"	(520)	28.5"	(724)	12.08	(5.48)
<input type="checkbox"/>	8"	XW	80C-XW-35	8.000"	(203)	14"	(356)	20.5"	(520)	28.5"	(724)	15.10	(6.95)



SINGLE EXPANSION JOINT SOCKET X SOCKET WITH O-RING

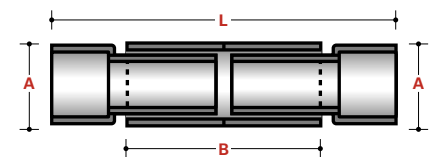
	NOMINAL		XW ITEM NO ABOVE GROUND	A		B		L - MIN		L - MAX		WEIGHT	
	SIZE	TYPE									LBS	KG	
<input type="checkbox"/>	3/4"	XW	07C-XW-37	1.935"	(54)	12"	(305)	16.5"	(419)	24.5"	(622)	1.76	(0.80)
<input type="checkbox"/>	1"	XW	10C-XW-37	2.200"	(61)	12"	(305)	16.5"	(419)	24.5"	(622)	1.97	(0.89)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-37	2.545"	(65)	12"	(305)	16.5"	(419)	24.5"	(622)	2.35	(1.07)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-37	2.785"	(71)	12"	(305)	16.5"	(419)	24.5"	(622)	2.72	(1.23)
<input type="checkbox"/>	2"	XW	20D-XW-37	3.000"	(76)	12"	(305)	20.5"	(520)	28.5"	(724)	3.62	(1.64)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-37	3.525"	(90)	12"	(305)	20.5"	(520)	28.5"	(724)	4.44	(2.01)
<input type="checkbox"/>	3"	XW	30D-XW-37	4.000"	(102)	12"	(305)	20.5"	(520)	28.5"	(724)	5.23	(2.37)
<input type="checkbox"/>	3-1/2"	XW	35D-XW-37	4.525"	(115)	12"	(305)	20.5"	(520)	28.5"	(724)	6.06	(2.75)
<input type="checkbox"/>	4"	XW	40D-XW-37	5.000"	(127)	14"	(356)	20.5"	(520)	28.5"	(724)	7.89	(3.58)
<input type="checkbox"/>	5"	XW	50D-XW-37	6.000"	(152)	14"	(356)	20.5"	(520)	28.5"	(724)	9.75	(4.43)
<input type="checkbox"/>	6"	XW	60D-XW-37	7.000"	(178)	14"	(356)	20.5"	(520)	28.5"	(724)	12.08	(5.48)
<input type="checkbox"/>	8"	XW	80C-XW-37	9.420"	(239)	14"	(356)	20.5"	(520)	28.5"	(724)	16.56	(7.52)



DOUBLE EXPANSION JOINT, NO O-RINGS

	NOMINAL		XW ITEM NO ABOVE GROUND	A		B		L - MIN		L - MAX		WEIGHT	
	SIZE	TYPE									LBS	KG	
<input type="checkbox"/>	3/4"	XW	07C-XW-38	1.935"	(54)	17"	(432)	32"	(813)	48"	(1,219)	3.01	(1.37)
<input type="checkbox"/>	1"	XW	10C-XW-38	2.200"	(61)	17"	(432)	32"	(813)	48"	(1,219)	3.36	(1.53)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-38	2.545"	(65)	17"	(432)	32"	(813)	48"	(1,219)	4.06	(1.84)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-38	2.785"	(71)	17"	(432)	32"	(813)	48"	(1,219)	5.83	(2.65)
<input type="checkbox"/>	2"	XW	20D-XW-38	3.000"	(76)	17"	(432)	40"	(1,016)	56"	(1,422)	6.24	(2.83)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-38	3.525"	(90)	17"	(432)	40"	(1,016)	56"	(1,422)	7.63	(3.46)
<input type="checkbox"/>	3"	XW	30D-XW-38	4.000"	(102)	17"	(432)	40"	(1,016)	56"	(1,422)	9.01	(4.09)
<input type="checkbox"/>	3-1/2"	XW	35D-XW-38	4.525"	(115)	17"	(432)	40"	(1,016)	56"	(1,422)	10.42	(4.72)
<input type="checkbox"/>	4"	XW	40D-XW-38	5.000"	(127)	17"	(432)	40"	(1,016)	56"	(1,422)	11.78	(5.35)
<input type="checkbox"/>	5"	XW	50D-XW-38	6.000"	(152)	17"	(432)	40"	(1,016)	56"	(1,422)	14.55	(6.61)
<input type="checkbox"/>	6"	XW	60D-XW-38	7.000"	(178)	17"	(432)	40"	(1,016)	56"	(1,422)	19.25	(8.74)
<input type="checkbox"/>	8"	XW	80C-XW-38	9.420"	(239)	17"	(432)	40"	(1,016)	56"	(1,422)	26.40	(11.99)

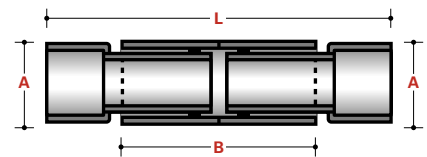
A double expansion joint is sometimes referred to as back-to-back expansion joint.



DOUBLE EXPANSION JOINT WITH O-RINGS

	NOMINAL		XW ITEM NO ABOVE GROUND	A	B	L - MIN		L - MAX		WEIGHT	
	SIZE	TYPE						LBS	KG		
<input type="checkbox"/>	3/4"	XW	07C-XW-39	1.935" (54)	17" (432)	32" (813)	48" (1,219)	3.01	(1.37)		
<input type="checkbox"/>	1"	XW	10C-XW-39	2.200" (61)	17" (432)	32" (813)	48" (1,219)	3.36	(1.53)		
<input type="checkbox"/>	1-1/4"	XW	12C-XW-39	2.545" (65)	17" (432)	32" (813)	48" (1,219)	4.06	(1.84)		
<input type="checkbox"/>	1-1/2"	XW	15C-XW-39	2.785" (71)	17" (432)	32" (813)	48" (1,219)	5.83	(2.65)		
<input type="checkbox"/>	2"	XW	20D-XW-39	3.000" (76)	17" (432)	40" (1,016)	56" (1,422)	6.24	(2.83)		
<input type="checkbox"/>	2-1/2"	XW	25D-XW-39	3.525" (90)	17" (432)	40" (1,016)	56" (1,422)	7.63	(3.46)		
<input type="checkbox"/>	3"	XW	30D-XW-39	4.000" (102)	17" (432)	40" (1,016)	56" (1,422)	9.01	(4.09)		
<input type="checkbox"/>	3-1/2"	XW	35D-XW-39	4.525" (115)	17" (432)	40" (1,016)	56" (1,422)	10.42	(4.72)		
<input type="checkbox"/>	4"	XW	40D-XW-39	5.000" (127)	17" (432)	40" (1,016)	56" (1,422)	11.78	(5.35)		
<input type="checkbox"/>	5"	XW	50D-XW-39	6.000" (152)	17" (432)	40" (1,016)	56" (1,422)	14.55	(6.61)		
<input type="checkbox"/>	6"	XW	60D-XW-39	7.000" (178)	17" (432)	40" (1,016)	56" (1,422)	19.25	(8.74)		
<input type="checkbox"/>	8"	XW	80C-XW-39	8.000" (203)	17" (432)	40" (1,016)	56" (1,422)	26.66	(11.63)		

A double expansion joint is sometimes referred to as back-to-back expansion joint.



End of expansion joints subsection ▲

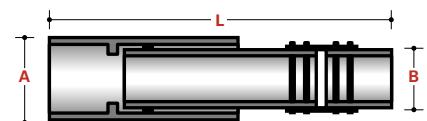
ALIGNMENT / EXPANSION FITTING WITH O-RING

	NOMINAL		XW ITEM NO ABOVE GROUND	A	B	L - MIN		L - MAX		WEIGHT	
	SIZE	TYPE						LBS	KG		
<input type="checkbox"/>	3/4"	XW	07C-XW-31	1.935" (54)	1.410" (36)	40.5" (1,028)	54.5" (1,384)	4.27	(1.94)		
<input type="checkbox"/>	1"	XW	10C-XW-31	2.200" (61)	1.675" (43)	40.5" (1,028)	54.5" (1,384)	4.76	(2.16)		
<input type="checkbox"/>	1-1/4"	XW	12C-XW-31	2.545" (65)	2.020" (51)	40.5" (1,028)	54.5" (1,384)	5.74	(2.60)		
<input type="checkbox"/>	1-1/2"	XW	15C-XW-31	2.785" (71)	2.260" (57)	40.5" (1,028)	54.5" (1,384)	8.26	(3.75)		
<input type="checkbox"/>	2"	XW	20D-XW-31	3.000" (76)	2.500" (64)	42.5" (1,080)	56.5" (1,435)	8.82	(4.00)		
<input type="checkbox"/>	2-1/2"	XW	25D-XW-31	3.525" (90)	3.000" (76)	42.5" (1,080)	56.5" (1,435)	10.78	(4.89)		
<input type="checkbox"/>	3"	XW	30D-XW-31	4.000" (102)	3.500" (89)	42.5" (1,080)	56.5" (1,435)	12.74	(5.78)		
<input type="checkbox"/>	3-1/2"	XW	35D-XW-31	4.525" (115)	4.000" (102)	42.5" (1,080)	56.5" (1,435)	14.70	(6.67)		
<input type="checkbox"/>	4"	XW	40D-XW-31	5.000" (127)	4.500" (114)	42.5" (1,080)	56.5" (1,435)	16.66	(7.56)		
<input type="checkbox"/>	5"	XW	50D-XW-31	6.000" (152)	5.500" (140)	42.5" (1,080)	56.5" (1,435)	20.58	(9.34)		
<input type="checkbox"/>	6"	XW	60D-XW-31	7.000" (178)	6.500" (165)	42.5" (1,080)	56.5" (1,435)	24.50	(11.12)		
<input type="checkbox"/>	8"	XW	80C-XW-31	8.000" (203)	7.500" (191)	42.5" (1,080)	56.5" (1,435)	29.16	(13.23)		

Alignment/Expansion fitting is sometimes referred to as an Expansion/Deflection joint.

(The clamps holding the rubber sleeve connecting the two nipples are made from stainless steel for corrosion protection.)

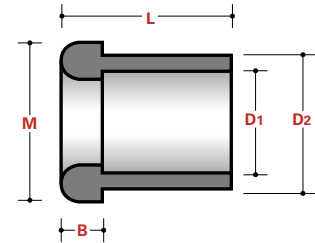
Note: All Expansion Joints have a yellow line on the nipple end of the joint for proper installation.



END BELLS – SOCKET TYPE

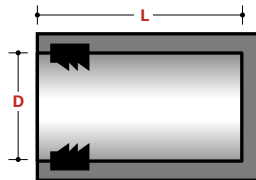
	NOMINAL		XW ITEM NO		D1	D2	L	M	B	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND						LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-29	07C-XW-29	1.43" (36)	1.94" (54)	1.60" (45)	2.48" (63)	0.31" (8)	0.63	(0.28)
<input type="checkbox"/>	1"	XW	10A-XW-29	10C-XW-29	1.70" (43)	2.20" (61)	1.60" (45)	2.70" (68)	0.31" (8)	0.70	(0.32)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-29	12C-XW-29	2.05" (52)	2.55" (65)	1.60" (45)	3.11" (79)	0.31" (8)	0.85	(0.38)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-29	15C-XW-29	2.29" (58)	2.79" (71)	1.60" (45)	3.35" (85)	0.31" (8)	1.22	(0.55)
<input type="checkbox"/>	2"	XW	20B-XW-29	20D-XW-29	2.52" (64)	3.02" (76)	3.00" (76)	3.62" (92)	0.31" (8)	1.30	(0.59)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-29	25D-XW-29	3.02" (77)	3.53" (90)	3.00" (76)	4.22" (107)	0.31" (8)	1.59	(0.72)
<input type="checkbox"/>	3"	XW	30B-XW-29	30D-XW-29	3.52" (89)	4.02" (102)	3.00" (76)	4.62" (117)	0.31" (8)	1.90	(0.86)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-29	35D-XW-29	4.03" (102)	4.53" (115)	3.00" (76)	5.48" (139)	0.31" (8)	2.17	(0.98)
<input type="checkbox"/>	4"	XW	40B-XW-29	40D-XW-29	4.52" (115)	5.02" (128)	5.00" (127)	5.62" (143)	0.31" (8)	2.40	(1.09)
<input type="checkbox"/>	5"	XW	50B-XW-29	50D-XW-29	5.52" (140)	6.02" (153)	5.00" (127)	6.62" (168)	0.31" (8)	2.42	(1.10)
<input type="checkbox"/>	6"	XW	60B-XW-29	60D-XW-29	6.52" (166)	7.02" (178)	5.00" (127)	7.62" (194)	0.31" (8)	2.50	(1.13)
<input type="checkbox"/>	8"	XW	80A-XW-29	80C-XW-29	8.48" (215)	9.00" (229)	5.00" (127)	9.40" (239)	0.31" (8)	-	-

End bells are used for creating a permanent termination into a box and have a smooth surface that the cable can be pulled over.



FIBERGLASS END CAPS WITH GASKET

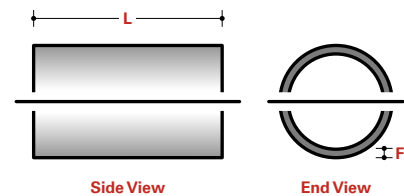
	NOMINAL		XW ITEM NO		D	L	WEIGHT	
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND			LBS	KG
<input type="checkbox"/>	3/4"	XW	07A-XW-23-G	07C-XW-23-G	1.43" (36)	4" (102)	0.31	(0.15)
<input type="checkbox"/>	1"	XW	10A-XW-23-G	10C-XW-23-G	1.70" (43)	4" (102)	0.46	(0.21)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-23-G	12C-XW-23-G	2.04" (52)	4" (102)	0.53	(0.24)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-23-G	15C-XW-23-G	2.28" (58)	4" (102)	0.65	(0.29)
<input type="checkbox"/>	2"	XW	20B-XW-23-G	20D-XW-23-G	2.52" (64)	4" (102)	0.70	(0.32)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-23-G	25D-XW-23-G	3.02" (76)	4" (102)	0.85	(0.39)
<input type="checkbox"/>	3"	XW	30B-XW-23-G	30D-XW-23-G	3.52" (89)	4" (102)	0.95	(0.43)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-23-G	35D-XW-23-G	4.02" (102)	4" (102)	1.20	(0.54)
<input type="checkbox"/>	4"	XW	40B-XW-23-G	40D-XW-23-G	4.52" (115)	4" (102)	1.40	(0.64)
<input type="checkbox"/>	5"	XW	50B-XW-23-G	50D-XW-23-G	5.52" (140)	4" (102)	1.90	(0.86)
<input type="checkbox"/>	6"	XW	60B-XW-23-G	60D-XW-23-G	6.52" (165)	4" (102)	2.40	(1.09)



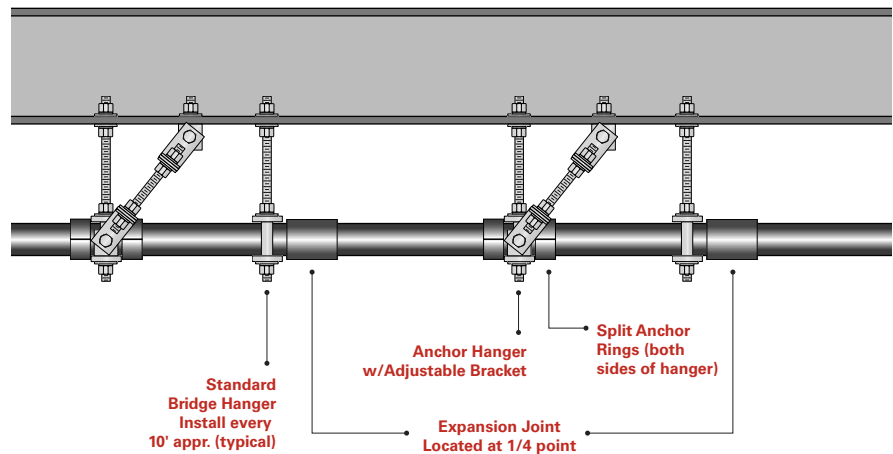
SPLIT ANCHOR RINGS

	NOMINAL		XW ITEM NO		F	L		WEIGHT		
	SIZE	TYPE	BELOW GROUND	ABOVE GROUND				LBS	KG	
<input type="checkbox"/>	3/4"	XW	07A-XW-28	07C-XW-28	0.25"	(6)	3"	(76)	0.25	(0.11)
<input type="checkbox"/>	1"	XW	10A-XW-28	10C-XW-28	0.25"	(6)	3"	(76)	0.28	(0.13)
<input type="checkbox"/>	1-1/4"	XW	12A-XW-28	12C-XW-28	0.25"	(6)	3"	(76)	0.34	(0.15)
<input type="checkbox"/>	1-1/2"	XW	15A-XW-28	15C-XW-28	0.25"	(6)	3"	(76)	0.49	(0.22)
<input type="checkbox"/>	2"	XW	20B-XW-28	20D-XW-28	0.25"	(6)	3"	(76)	0.52	(0.24)
<input type="checkbox"/>	2-1/2"	XW	25B-XW-28	25D-XW-28	0.25"	(6)	3"	(76)	0.64	(0.29)
<input type="checkbox"/>	3"	XW	30B-XW-28	30D-XW-28	0.25"	(6)	3"	(76)	0.80	(0.36)
<input type="checkbox"/>	3-1/2"	XW	35B-XW-28	35D-XW-28	0.25"	(6)	3"	(76)	0.87	(0.39)
<input type="checkbox"/>	4"	XW	40B-XW-28	40D-XW-28	0.25"	(6)	3"	(76)	0.98	(0.44)
<input type="checkbox"/>	5"	XW	50B-XW-28	50D-XW-28	0.25"	(6)	3"	(76)	1.15	(0.52)
<input type="checkbox"/>	6"	XW	60B-XW-28	60D-XW-28	0.25"	(6)	3"	(76)	1.25	(0.57)

Split anchor rings are always supplied in pairs and are used for above ground installations in order to create fixed points. The split anchor rings are placed around the hanger closest to the mid point between two expansion joints. One pair of split anchor rings is placed on each side of the hanger. The split anchor rings are bonded with epoxy adhesive to the outside of the conduit. The hanger where split anchor rings are used is called an anchor hanger and is normally braced, see Bridge Hanger section in this catalog.



For further information, use your smart phone's QR code scanner to learn more about **Champion Fiberglass** split anchor rings.



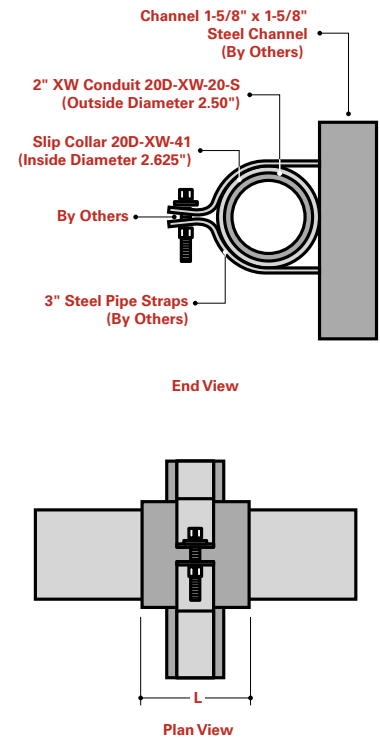
SLIP COLLARS

	SIZE	XW ITEM NO	ID	OD	WALL THICKNESS		L		IPS STD SIZE		CHAMPION SLIP COLLAR TO CONDUIT DIAMETRICAL SLIP GAP	
									OD			
<input type="checkbox"/>	3/4"	07C-XW-41	1.410" (36)	1.535" (39)	0.1825" (5)		3" (76)		1.900" (48)		0.125" (3.18)	
<input type="checkbox"/>	1"	10C-XW-41	1.675" (43)	1.800" (41)	0.2875" (7)		3" (76)		2.375" (60)		0.125" (3.18)	
<input type="checkbox"/>	1-1/4"	12C-XW-41	2.020" (51)	2.145" (54)	0.365" (9)		3" (76)		2.875" (73)		0.125" (3.18)	
<input type="checkbox"/>	1-1/2"	15C-XW-41	2.260" (57)	2.385" (61)	0.245" (6)		3" (76)		2.875" (73)		0.125" (3.18)	
<input type="checkbox"/>	2"	20D-XW-41	2.500" (64)	2.625" (67)	0.4125" (10)		3" (76)		3.450" (88)		0.125" (3.18)	
<input type="checkbox"/>	2-1/2"	25D-XW-41	3.000" (76)	3.125" (79)	0.1625" (4)		3" (76)		3.450" (88)		0.125" (3.18)	
<input type="checkbox"/>	3"	30D-XW-41	3.500" (89)	3.625" (92)	0.1875" (5)		3" (76)		4.000" (102)		0.125" (3.18)	
<input type="checkbox"/>	3-1/2"	35D-XW-41	4.000" (102)	4.125" (105)	0.1875" (5)		3" (76)		4.500" (114)		0.125" (3.18)	
<input type="checkbox"/>	4"	40D-XW-41	4.500" (114)	4.625" (117)	0.469" (12)		3" (76)		5.563" (141)		0.125" (3.18)	
<input type="checkbox"/>	5"	50D-XW-41	5.500" (140)	5.625" (143)	0.500" (13)		3" (76)		6.625" (168)		0.125" (3.18)	
<input type="checkbox"/>	6"	60D-XW-41	6.500" (165)	6.625" (168)	1.000" (25)		3" (76)		8.625" (219)		0.125" (3.18)	

Champion Fiberglass Slip Collars allow unrestricted expansion/contraction movement of RTRC conduit while still providing proper support to the conduit system. The Slip Collars eliminate the expansion/contraction binding that naturally occurs in traditional pipe clamp installations.

The advantages of Champion Fiberglass Slip Collars include:

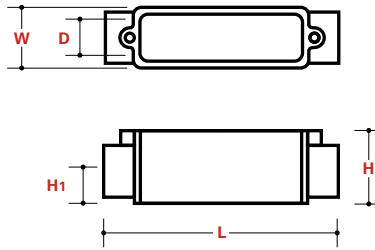
- Can be used with steel or fiberglass pipe clamps.
- Available in black or grey epoxy.
- Heavy-duty wall thickness collar allows for considerable pipe clamp tightening without any force transfer to conduit.



Conduit Bodies

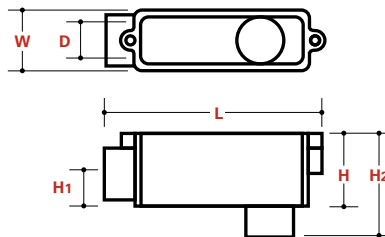
TYPE C

	NOMINAL		XW ITEM NO ABOVE GROUND	L		H		W		H1		D		VOLUME		WEIGHT	
	SIZE	TYPE		IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	CU IN	(CM ³)	LBS	(KG)
<input type="checkbox"/>	3/4"	XW	07C-XW-C	8.375"	(213)	2.375"	(60)	1.840"	(47)	1.000"	(25)	1.435"	(36)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1"	XW	10C-XW-C	8.375"	(213)	2.375"	(60)	1.840"	(47)	1.000"	(25)	1.700"	(43)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-C	10.125"	(257)	2.875"	(73)	2.540"	(64)	1.188"	(30)	2.045"	(52)	32.00"	(524)	1.20	(0.54)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-C	10.125"	(257)	2.875"	(73)	2.540"	(64)	1.188"	(30)	2.285"	(58)	32.00"	(524)	1.10	(0.50)
<input type="checkbox"/>	2"	XW	20D-XW-C	13.375"	(340)	4.000"	(102)	3.040"	(77)	1.812"	(46)	2.520"	(64)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-C	13.375"	(340)	4.000"	(102)	3.040"	(77)	1.812"	(46)	3.025"	(77)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	3"	XW	30D-XW-C	21.750"	(552)	6.000"	(152)	5.875"	(149)	3.000"	(76)	3.520"	(89)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	3-1/2"	XW	30D-XW-C	21.750"	(552)	6.000"	(152)	5.875"	(149)	3.000"	(76)	4.025"	(102)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	4"	XW	40D-XW-C	21.750"	(552)	6.000"	(152)	5.875"	(149)	3.000"	(76)	4.520"	(115)	425.00"	(6,964)	4.24	(1.92)



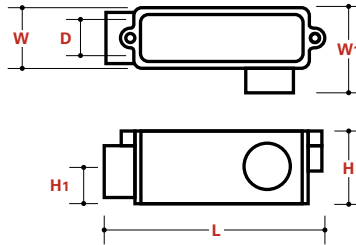
TYPE LB

	NOMINAL		XW ITEM NO ABOVE GROUND	L		H		W		H1		H2		D		VOLUME		WEIGHT	
	SIZE	TYPE		IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	CU IN	(CM ³)	LBS	(KG)
<input type="checkbox"/>	3/4"	XW	07C-XW-LB	7.375"	(187)	2.375"	(60)	1.840"	(47)	1.000"	(25)	3.900"	(99)	1.435"	(36)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1"	XW	10C-XW-LB	7.375"	(187)	2.375"	(60)	1.840"	(47)	1.000"	(25)	3.900"	(99)	1.700"	(43)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-LB	9.000"	(229)	2.875"	(73)	2.540"	(64)	1.188"	(30)	4.875"	(124)	2.045"	(52)	32.00"	(524)	1.20	(0.54)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-LB	9.000"	(229)	2.875"	(73)	2.540"	(64)	1.188"	(30)	4.875"	(124)	2.285"	(58)	32.00"	(524)	1.10	(0.50)
<input type="checkbox"/>	2"	XW	20D-XW-LB	11.250"	(286)	4.000"	(102)	3.040"	(77)	1.812"	(46)	6.687"	(170)	2.520"	(64)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-LB	11.250"	(286)	4.000"	(102)	3.040"	(77)	1.812"	(46)	6.687"	(170)	3.025"	(77)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	3"	XW	30D-XW-LB	16.125"	(410)	6.000"	(152)	5.875"	(149)	3.000"	(76)	8.750"	(222)	3.520"	(89)	425.00"	(6,964)	4.25	(1.92)
<input type="checkbox"/>	3-1/2"	XW	30D-XW-LB	16.125"	(410)	6.000"	(152)	5.875"	(149)	3.000"	(76)	8.750"	(222)	4.025"	(102)	425.00"	(6,964)	4.25	(1.92)
<input type="checkbox"/>	4"	XW	40D-XW-LB	16.125"	(410)	6.000"	(152)	5.875"	(149)	3.000"	(76)	8.750"	(222)	4.520"	(115)	425.00"	(6,964)	4.25	(1.92)



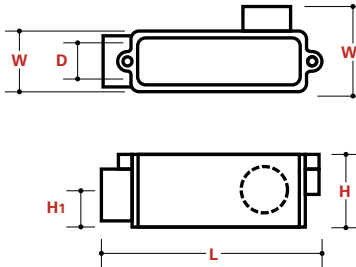
TYPE LL

	NOMINAL		XW ITEM NO ABOVE GROUND	L		H		W		W1		H1		D		VOLUME		WEIGHT	
	SIZE	TYPE		IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	CU IN	(CM ³)	LBS	(KG)
<input type="checkbox"/>	3/4"	XW	07C-SW-LL	7.375"	(187)	2.375"	(60)	1.840"	(47)	3.500"	(89)	1.000"	(25)	1.435"	(36)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1"	XW	10C-SW-LL	7.375"	(187)	2.375"	(60)	1.840"	(47)	3.500"	(89)	1.000"	(25)	1.700"	(43)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1-1/4"	XW	12C-SW-LL	9.000"	(229)	2.875"	(73)	2.540"	(64)	4.500"	(114)	1.188"	(30)	2.045"	(52)	32.00"	(524)	1.20	(0.54)
<input type="checkbox"/>	1-1/2"	XW	15C-SW-LL	9.000"	(229)	2.875"	(73)	2.540"	(64)	4.500"	(114)	1.188"	(30)	2.285"	(58)	32.00"	(524)	1.10	(0.50)
<input type="checkbox"/>	2"	XW	20D-SW-LL	11.250"	(286)	4.000"	(102)	3.040"	(77)	5.500"	(140)	1.812"	(46)	2.520"	(64)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	2-1/2"	XW	25D-SW-LL	11.250"	(286)	4.000"	(102)	3.040"	(77)	5.500"	(140)	1.812"	(46)	3.025"	(77)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	3"	XW	30D-SW-LL	16.125"	(410)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	3.520"	(89)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	3-1/2"	XW	35D-SW-LL	16.125"	(410)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	4.025"	(102)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	4"	XW	40D-SW-LL	16.125"	(410)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	4.520"	(115)	425.00"	(6,964)	4.24	(1.92)



TYPE LR

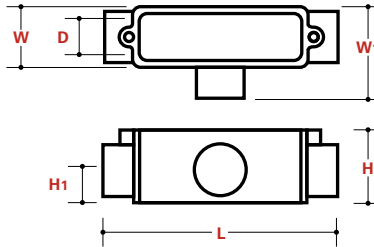
	NOMINAL		XW ITEM NO ABOVE GROUND	L		H		W		W1		H1		D		VOLUME		WEIGHT	
	SIZE	TYPE		IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	CU IN	(CM ³)	LBS	(KG)
<input type="checkbox"/>	3/4"	XW	07C-SW-LR	7.375"	(187)	2.375"	(60)	1.840"	(47)	3.500"	(89)	1.000"	(25)	1.435"	(36)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1"	XW	10C-SW-LR	7.375"	(187)	2.375"	(60)	1.840"	(47)	3.500"	(89)	1.000"	(25)	1.700"	(43)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1-1/4"	XW	12C-SW-LR	9.000"	(229)	2.875"	(73)	2.540"	(64)	4.500"	(114)	1.188"	(30)	2.045"	(52)	32.00"	(524)	1.20	(0.54)
<input type="checkbox"/>	1-1/2"	XW	15C-SW-LR	9.000"	(229)	2.875"	(73)	2.540"	(64)	4.500"	(114)	1.188"	(30)	2.285"	(58)	32.00"	(524)	1.10	(0.50)
<input type="checkbox"/>	2"	XW	20D-SW-LR	11.250"	(286)	4.000"	(102)	3.040"	(77)	5.500"	(140)	1.812"	(46)	2.520"	(64)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	2-1/2"	XW	25D-SW-LR	11.250"	(286)	4.000"	(102)	3.040"	(77)	5.500"	(140)	1.812"	(46)	3.025"	(77)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	3"	XW	30D-SW-LR	16.125"	(410)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	3.520"	(89)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	3-1/2"	XW	35D-SW-LR	16.125"	(410)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	4.025"	(102)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	4"	XW	40C-SW-LR	16.125"	(410)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	4.520"	(115)	425.00"	(6,964)	4.24	(1.92)



CONDUIT BODIES (XW)

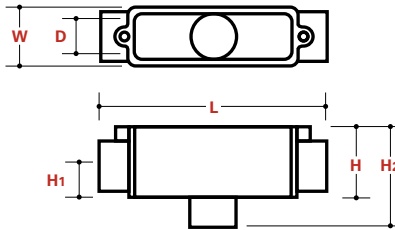
TYPE T

	NOMINAL		XW ITEM NO ABOVE GROUND	L		H		W		W1		H1		D		VOLUME		WEIGHT	
	SIZE	TYPE		IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	CU IN	(CM ³)	LBS	(KG)
<input type="checkbox"/>	3/4"	XW	07C-XW-T	8.375"	(213)	2.375"	(60)	1.840"	(47)	3.500"	(89)	1.000"	(25)	1.435"	(36)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1"	XW	10C-XW-T	8.375"	(213)	2.375"	(60)	1.840"	(47)	3.500"	(89)	1.000"	(25)	1.700"	(43)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-T	10.125"	(257)	3.000"	(76)	2.540"	(64)	4.437"	(113)	1.188"	(30)	2.045"	(52)	32.00"	(524)	1.40	(0.64)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-T	10.125"	(257)	3.000"	(76)	2.540"	(64)	4.437"	(113)	1.188"	(30)	2.285"	(58)	32.00"	(524)	1.30	(0.59)
<input type="checkbox"/>	2"	XW	20D-XW-T	13.375"	(340)	4.000"	(102)	3.040"	(77)	5.500"	(140)	1.812"	(46)	2.520"	(64)	70.75"	(1,160)	2.80	(1.27)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-T	13.375"	(340)	4.000"	(102)	3.040"	(77)	5.500"	(140)	1.812"	(46)	3.025"	(77)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	3"	XW	30D-XW-T	21.750"	(552)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	3.520"	(89)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	3-1/2"	XW	35D-XW-T	21.750"	(552)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	4.025"	(102)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	4"	XW	40D-XW-T	21.750"	(552)	6.000"	(152)	5.875"	(149)	8.750"	(222)	3.000"	(76)	4.520"	(115)	425.00"	(6,964)	4.24	(1.92)



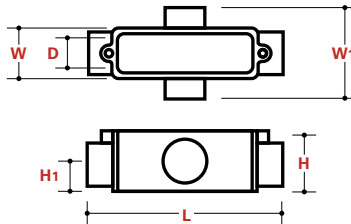
TYPE TB

	NOMINAL		XW ITEM NO ABOVE GROUND	L		H		W		H1		H2		D		VOLUME		WEIGHT	
	SIZE	TYPE		IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	CU IN	(CM ³)	LBS	(KG)
<input type="checkbox"/>	3/4"	XW	07C-XW-TB	8.375"	(213)	2.375"	(60)	1.840"	(47)	1.000"	(25)	3.900"	(99)	1.435"	(36)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1"	XW	10C-XW-TB	8.375"	(213)	2.375"	(60)	1.840"	(47)	1.000"	(25)	3.900"	(99)	1.700"	(43)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-TB	10.125"	(257)	3.000"	(76)	2.540"	(64)	1.188"	(30)	4.875"	(124)	2.045"	(52)	32.00"	(524)	1.40	(0.64)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-TB	10.125"	(257)	3.000"	(76)	2.540"	(64)	1.188"	(30)	4.875"	(124)	2.285"	(58)	32.00"	(524)	1.30	(0.59)
<input type="checkbox"/>	2"	XW	20D-XW-TB	13.375"	(340)	4.000"	(102)	3.040"	(77)	1.812"	(46)	6.687"	(170)	2.520"	(64)	70.75"	(1,160)	2.80	(1.27)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-TB	13.375"	(340)	4.000"	(102)	3.040"	(77)	1.812"	(46)	6.687"	(170)	3.025"	(77)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	3"	XW	30D-XW-TB	21.750"	(552)	6.000"	(152)	5.875"	(149)	3.000"	(76)	8.750"	(222)	3.520"	(89)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	3-1/2"	XW	35D-XW-TB	21.750"	(552)	6.000"	(152)	5.875"	(149)	3.000"	(76)	8.750"	(222)	4.025"	(102)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	4"	XW	40D-XW-TB	21.750"	(552)	6.000"	(152)	5.875"	(149)	3.000"	(76)	8.750"	(222)	4.520"	(115)	425.00"	(6,964)	4.24	(1.92)



TYPE X

	NOMINAL		XW ITEM NO ABOVE GROUND	L		H		W		W1		H1		D		VOLUME		WEIGHT	
	SIZE	TYPE		IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	IN	(MM)	CU IN	(CM ³)	LBS	(KG)
<input type="checkbox"/>	3/4"	XW	07C-XW-X	8.375"	(213)	2.375"	(60)	1.840"	(47)	4.750"	(121)	1.000"	(25)	1.435"	(36)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1"	XW	10C-XW-X	8.375"	(213)	2.375"	(60)	1.840"	(47)	4.750"	(121)	1.000"	(25)	1.700"	(43)	13.90"	(228)	0.70	(0.32)
<input type="checkbox"/>	1-1/4"	XW	12C-XW-X	10.125"	(257)	3.000"	(76)	2.540"	(64)	6.437"	(163)	1.188"	(30)	2.045"	(52)	32.00"	(524)	1.60	(0.73)
<input type="checkbox"/>	1-1/2"	XW	15C-XW-X	10.125"	(257)	3.000"	(76)	2.540"	(64)	6.437"	(163)	1.188"	(30)	2.285"	(58)	32.00"	(524)	1.50	(0.68)
<input type="checkbox"/>	2"	XW	20D-XW-X	13.375"	(340)	4.000"	(102)	3.040"	(77)	7.188"	(182)	1.812"	(46)	2.520"	(64)	70.75"	(1,160)	3.00	(1.36)
<input type="checkbox"/>	2-1/2"	XW	25D-XW-X	13.375"	(340)	4.000"	(102)	3.040"	(77)	7.188"	(182)	1.812"	(46)	3.025"	(77)	70.75"	(1,160)	2.50	(1.13)
<input type="checkbox"/>	3"	XW	30D-XW-X	21.750"	(552)	6.000"	(152)	5.875"	(149)	11.500"	(292)	3.000"	(76)	3.520"	(89)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	3-1/2"	XW	35D-XW-X	21.750"	(552)	6.000"	(152)	5.875"	(149)	11.500"	(292)	3.000"	(76)	4.025"	(102)	425.00"	(6,964)	4.24	(1.92)
<input type="checkbox"/>	4"	XW	40D-XW-X	21.750"	(552)	6.000"	(152)	5.875"	(149)	11.500"	(292)	3.000"	(76)	4.520"	(115)	425.00"	(6,964)	4.24	(1.92)



THERMOPLASTIC PLUG

	NOMINAL		ITEM NO
	SIZE	TYPE	
<input type="checkbox"/>	3/4"	XW	07-ID-26
<input type="checkbox"/>	1"	XW	10-ID-26
<input type="checkbox"/>	1-1/4"	XW	12-ID-26
<input type="checkbox"/>	1-1/2"	XW	15-ID-26
<input type="checkbox"/>	2"	XW	20-ID-26
<input type="checkbox"/>	2-1/2"	XW	25-ID-26
<input type="checkbox"/>	3"	XW	30-ID-26
<input type="checkbox"/>	3-1/2"	XW	35-ID-26
<input type="checkbox"/>	4"	XW	40-ID-26
<input type="checkbox"/>	5"	XW	50-ID-26
<input type="checkbox"/>	6"	XW	60-ID-26



The thermoplastic plugs are lightweight plastic plugs that "press-fit" into the conduit or elbow ends to keep debris out of conduit and elbows.

Champion Engineering Specifications (XW)

XW (EXTRA HEAVY WALL) EPOXY FIBERGLASS CONDUIT SPECIFICATIONS

I. References

When a standard or other referenced document referred to in this specification is superseded by an approved revision, the revision shall apply.

II. Listing

The conduit and fittings shall be listed by UL, Underwriters Laboratories, to the UL 2515A (Extra Heavy Wall) standard. Type XW Conduit shall be allowed for use in Class I, Division 2 installations when installed per NEC (National Electric Code) guidelines. All conduit shipped shall contain UL labels.

III. UL-listed Extended Support Spans

The conduit shall be UL listed for the following extended support span lengths.

CONDUIT SIZE	EXTRA HEAVY WALL (.250")
3/4"	10'
1"	10'
1-1/4"	15'
1-1/2"	15'
2"	15'
2-1/2"	15'
3"	17'
4"	17'
5"	17'
6"	17'

IV. Manufacturing

The conduit shall be fiberglass conduit, also known as Reinforced Thermosetting Resin Conduit (RTRC), manufactured using the **single-circuit filament winding process**. Multi-circuit windings are not allowed.

The conduit shall have a winding angle as close as possible to 54.75°. Winding mandrels shall be straight and true so as to produce a non-tapered conduit. Tapering is allowed at the belled end.

The resin system shall be epoxy based, with no fillers, using an anhydride curing agent. The fiberglass shall consist of continuous **E-glass Grade "A" roving**. All additives for increasing flame spread and lowering smoke density shall be halogen free, i.e. not contain chlorine or bromine.

Carbon black shall be used as ultraviolet inhibitor to protect the conduit and fittings during storage and exposure to the outdoors. Conduit and elbows shall be black in color unless a custom color has been sourced by special request.

Curing shall be done using an oven and shall take place in two steps. The first curing zone shall bring the conduit slowly to the gel temperature. The second zone shall post-cure the conduit at no less than 350°F. The pipe has to be properly cured so that when measuring the glass transition temperature with a differential calorimeter, the difference between the first measurement and the second shall not exceed 5°F.

The internal conduit and elbow walls shall be smooth and all fibers embedded in the epoxy.

All elbows shall meet the nominal radius plus or minus 2°. The wall thickness shall meet tolerance as shown on facing page and the "Out of Rounds" as shown in NEMA TC 14.

All elbows shall have straight ends, fiberglass or deep socket PVC couplings (per project requirements).

All conduit bodies shall be compression molded from vinyl ester resin and utilize "Champ-Seal" gasket technology. The gasketing system will consist of a silicon-based gasket that is water-tight, corrosion-resistant and resists impression setting.

All conduits and elbows shall be durably and legibly marked in accordance to NEMA TC 14. In addition, the following information shall be included:

- NEMA TC 14
- UL 2515A (Extra Heavy Wall - Above Ground)
- Manufacturer and reseller (if the conduit was modified or bent other than by the manufacturer)
- Date of manufacturing of conduit and elbows
- Elbows shall be marked with the angle and radius
- Special customer markings (per request)

All conduit, elbows and fittings shall be **manufactured in the U.S.A. and marked as such.**

V. Dimensions

All 2"-6" and 10" and 12" conduits shall be manufactured in ID sizes. All other sizes to be IPS.

Conduit shall be manufactured having **non-tapered sections** (except for integral belled ends).

Conduit shall be manufactured with following nominal dimensions:

SIZE	TYPE	OUTSIDE DIAMETER		INSIDE DIAMETER		WALL THICKNESS	
		IN	IN	IN	IN	IN	IN
3/4"	XW	1.410"		0.910"		.250"	
1"	XW	1.675"		1.175"		.250"	
1-1/4"	XW	2.020"		1.520"		.250"	
1-1/2"	XW	2.260"		1.760"		.250"	
2"	XW	2.500"		2.000"		.250"	
2-1/2"	XW	3.000"		2.500"		.250"	
3"	XW	3.500"		3.000"		.250"	
3-1/2"	XW	4.000"		3.500"		.250"	
4"	XW	4.500"		4.000"		.250"	
5"	XW	5.500"		5.000"		.250"	
6"	XW	6.500"		6.000"		.250"	

VI. Electrical Characteristics

Volume Resistivity	3.8 x 10 ¹⁴ ohm-cm	ASTM D257
Surface Resistivity	1.1 x 10 ¹⁴ ohms	ASTM D257
Dielectric Constant	3.5 (at 10 ³ cps)	ASTM D150
Dissipation Factor	0.005 (at 10 ³ cps)	ASTM D150
Dielectric Strength	500 volts/mil (19.7 kv/mm)	ASTM D149

VII. Mechanical Characteristics

The conduit shall have following mechanical strength when tested in accordance with referenced test method:

Tensile Strength, Axial	11,000 psi (76 MPa)	ASTM D2105
Compressive Strength	12,000 psi (83 MPa)	ASTM D695
Ultimate Elongation	2% psi (9.6 GPa)	ASTM D2105
Modulus of Elasticity (4" conduit)	1.4 x 10 ⁶ psi (9.6 GPa)	ASTM D2105
Thermal Conductivity	2.0 Btu.in/ft ² .hr.°F (0.30 W/m.K)	ASTM D5930-1
Specific Gravity	1.9	ASTM D792
Glass Content	65-75%	API 15LR
Water Absorption	1% max	ASTM D570
Barcol Hardness	52-56	ASTM D2583
Coefficient of Thermal Expansion	1.2 x 10 ⁻⁵ in/in/°F (2.2 x 10 ⁻⁵ m/m/°C)	ASTM D696

Impact Resistance: ASTM D2444

SIZE	TYPE	ASTM D2444
3/4"	XW	150 lbs/ft
1"	XW	400 lbs/ft
1-1/4"	XW	400 lbs/ft
1-1/2"	XW	500 lbs/ft
2"	XW	550 lbs/ft
2-1/2"	XW	600 lbs/ft
3"	XW	700 lbs/ft
3-1/2"	XW	850 lbs/ft
4"	XW	1,000 lbs/ft
5"	XW	1,200 lbs/ft
6"	XW	1,300 lbs/ft

Stiffness at 5% Deflection: ASTM D2412

SIZE	TYPE	ASTM D2412
3/4"	XW	2,500 lb/ft/in ²
1"	XW	2,400 lb/ft/in ²
1-1/4"	XW	2,100 lb/ft/in ²
1-1/2"	XW	2,000 lb/ft/in ²
2"	XW	1,300 lb/ft/in ²
2-1/2"	XW	800 lb/ft/in ²
3"	XW	600 lb/ft/in ²
3-1/2"	XW	450 lb/ft/in ²
4"	XW	250 lb/ft/in ²
5"	XW	180 lb/ft/in ²
6"	XW	150 lb/ft/in ²

VIII. Fire Resistance and Flame Spread

Conduit shall meet UL specifications of UL 2420 (below ground) and UL 2515 (above ground), i.e. the flame shall extinguish within 30 seconds each time after four consecutive applications of 15 seconds and shall extinguish within 60 seconds after the fifth flame application also being 15 seconds in duration.

IX. Quality Assurance Program

Manufacturer shall have a current Certificate, issued by an independent and accredited company, of compliance with an **ISO 9001: 2015 Quality Management System**.

X. Joining System

Conduit Straight Socket

The conduit shall be supplied with a bonded coupling or an integral wound bell on one end and a machined spigot on the other end. A two-part adhesive, epoxy resin system, designed to permanently bond fittings and joints of conduit shall be properly mixed and applied to the spigot end before joining the conduits together. The adhesive shall be available for use in three different ambient temperatures, 70°F, 40°F and 20°F. The adhesive shall be supplied from the same manufacturer of conduit and fittings in order not to void the listing by UL.

XI. Toxicity

The conduit shall not contain any compounds that can release halogens, i.e. chlorine, bromine, fluorine and iodine, in more than trace amounts when burning. Following shall be the maximum values when tested in accordance to ASTM E-800:

GASES	VALUES (MAX PPM)
Hydrogen Chloride	0
Hydrogen Bromide	0
Hydrogen Cyanide	<1
Hydrogen Sulfide	0
Ammonia	0
Aldehydes as HCHO	<10
Oxides of Nitrogen	<50
Carbon Dioxide	<12,500
Carbon Monoxide	<250

XII. Fittings and Accessories

Fiberglass conduit fittings, elbows, and accessories shall be manufactured using one of two manufacturing procedures. The first method shall use the same process, methods and components as used to manufacture the fiberglass conduit. The second method shall use the compression molding process, Sheet Molding Compound (SMC), for the manufacture of the finished component. The SMC material shall be a vinyl ester resin with +30% reinforcement of glass. The glass fibers should be approximately 1" in length. The SMC material shall be fire resistant to UL 2515 specifications and shall be halogen free.

All conduit bodies shall be supplied with Champion's unique "Champ-Seal" gasketing system. This is a silicon-based, water-tight, corrosion-resistant gasketing system that completely resists impression setting.

XIII. Environmental

Manufacturer shall have a current Certificate, issued by an independent and accredited company, of compliance with an **ISO 14001: Environmental Management Systems and Performance**.

XIV. Installation Training

Manufacturer may provide (upon request) contractor installation training for field cutting, joint preparation, joint assembly, field bending and RTRC field cut sealing (with field cutting sealant) at manufacturer's discretion.

Tools

CHAMPION MIX® (EPOXY ADHESIVE)

The Champion Mix system is a two-part adhesive (1-to-1 mix ratio), epoxy resin system, designed to permanently bond fittings and joints of fiberglass reinforced epoxy conduit. It is also designed for use with pultruded polyester and vinyl ester components. Each cartridge system contains resin, hardener and one plastic static mixer. An adhesive gun is required for applying the adhesive (ordered separately). Under normal conditions, it takes approximately 45 minutes for the CM-2040 and CM-2070 adhesives to harden at their rated temperatures. If a faster setting adhesive is desired, there are Champion Mix adhesives available that gel much faster. The “Fast Gel” adhesives can be specified by adding the suffixes, “-FG” or “-SFG” to the item numbers. Because the “Fast Gel” and “Super-Fast Gel” adhesives set up quicker, additional mixing tubes may be required.

The epoxy adhesive is also available in three convenient dispensing tube sizes: 50 ML, 150 ML and 300 ML.



For further information, use your smart phone's camera or QR code scanner to learn more about **Champion Mix** adhesives.



For further information, use your smart phone's camera or QR code scanner to learn more about **Champion's Epoxy Adhesive Calculator**.

	ITEM NO	SIZE	TEMPERATURE RANGE	APPROXIMATE CURING TIME
<input type="checkbox"/>	CM-570	50 ML	70°F (21°C) and above	30–45 minutes
<input type="checkbox"/>	CM-570-FG	50 ML	70°F (21°C) and above	20–30 minutes
<input type="checkbox"/>	CM-570-SFG	50 ML	70°F (21°C) and above	3–7 minutes
<input type="checkbox"/>	CM-540	50 ML	40°–70°F (4°C–21°C)	30–45 minutes
<input type="checkbox"/>	CM-540-FG	50 ML	40°–70°F (4°C–21°C)	20–30 minutes
<input type="checkbox"/>	CM-540-SFG	50 ML	40°–70°F (4°C–21°C)	3–7 minutes
<input type="checkbox"/>	CM-1070	150 ML	70°F (21°C) and above	30–45 minutes
<input type="checkbox"/>	CM-1070-FG	150 ML	70°F (21°C) and above	20–30 minutes
<input type="checkbox"/>	CM-1070-SFG	150 ML	70°F (21°C) and above	3–7 minutes
<input type="checkbox"/>	CM-1040	150 ML	40°–70°F (4°C–21°C)	30–45 minutes
<input type="checkbox"/>	CM-1040-FG	150 ML	40°–70°F (4°C–21°C)	20–30 minutes
<input type="checkbox"/>	CM-1040-SFG	150 ML	40°–70°F (4°C–21°C)	3–7 minutes
<input type="checkbox"/>	CM-2070	300 ML	70°F (21°C) and above	30–45 minutes
<input type="checkbox"/>	CM-2070-FG	300 ML	70°F (21°C) and above	20–30 minutes
<input type="checkbox"/>	CM-2070-SFG	300 ML	70°F (21°C) and above	3–7 minutes
<input type="checkbox"/>	CM-2040	300 ML	40°–70°F (4°C–21°C)	30–45 minutes
<input type="checkbox"/>	CM-2040-FG	300 ML	40°–70°F (4°C–21°C)	20–30 minutes
<input type="checkbox"/>	CM-2040-SFG	300 ML	40°–70°F (4°C–21°C)	3–7 minutes



50 ML Tubes



150 ML Tubes



300 ML Tubes



Estimated Number of Joints Per Container

(estimated only - varies depending on amount of adhesive applied per application)

50 ML		80 ML		300 ML	
SIZE	JOINTS PER CONTAINER	SIZE	JOINTS PER CONTAINER	SIZE	JOINTS PER CONTAINER
3/4"	16	3/4"	27	3/4"	100
1"	14	1"	22	1"	85
1-1/4"	12	1-1/4"	20	1-1/4"	75
1-1/2"	10	1-1/2"	16	1-1/2"	60
2"	8	2"	13	2"	50
2-1/2"	6	2-1/2"	11	2-1/2"	40
3"	5	3"	9	3"	35
3-1/2"	5	3-1/2"	8	3-1/2"	30
4"	4	4"	6	4"	25
5"	3	5"	5	5"	20
6"	2	6"	4	6"	15

ADHESIVE GUNS

Champion Fiberglass adhesive guns are available for all three adhesive tube sizes; 50 ML, 80 ML and 300 ML.

	ITEM NO	ADHESIVE TUBE SIZE
<input type="checkbox"/>	CMAG-5	50 ML
<input type="checkbox"/>	CMAG-10	80 ML
<input type="checkbox"/>	CMAG-20	300 ML



CMAG-5



CMAG-10



CMAG-20

BATTERY-POWERED ADHESIVE GUN

Champion Fiberglass 18V Li-Io battery-powered adhesive guns are only available for the 300 ML adhesive tube sizes. This powerful 18V cordless drive system is supplied with a sturdy 300 ML dispensing cartridge carriage.

Other features include:

- Flow control – instant drive disengagement when trigger is released
- Lightweight ergonomic design – reduces wrist and arm strain
- Rapid battery charging – 30 minutes
- Battery fuel gauge – indicates charging power battery level

All battery-powered adhesive guns are supplied fully assembled and supplied with one (1) 18V Li-Io battery and (1) 18V charger.

	ITEM NO	ADHESIVE TUBE SIZE
<input type="checkbox"/>	CMAG-20-B	300 ML



CMAG-20-B

MIXING TIPS

Champion Fiberglass mixing tips are required for mixing together the two-part epoxy adhesive supplied in tubes. They are available for all three adhesive tube sizes; 50 ML, 150 ML and 300 ML.



	ITEM NO	ADHESIVE TUBE SIZE
<input type="checkbox"/>	CM-MT-5	50 ML
<input type="checkbox"/>	CM-MT-10	150 ML
<input type="checkbox"/>	CM-MT-20	300 ML

EPOXY ADHESIVE KIT

Champion Fiberglass Epoxy Adhesive Kit, contains two cans, one with base epoxy adhesive (black color) and the other with hardener (white color), stir sticks, sand paper for abrading conduit surfaces and an instruction sheet. When properly mixed, the adhesive will be evenly grey.

The adhesive kit is offered for three different ambient curing temperatures:

- Item# CF-1070, for 70°F (21°C) ambient temperature (standard grade)
- Item# CF-1040, for 40°F (4°C) ambient temperature (special grade)
- Item# CF-1020, for 20°F (-7°C) ambient temperature (special grade)

Adhesive curing time is dependent on the ambient temperature. As a guideline, the CF-1070 adhesive is cured at 75°F (29°C) in one hour. Contact Champion Fiberglass for curing information at extreme temperatures (high or low). Champion Fiberglass adhesive can be used for bonding fiberglass and PVC together.

Estimated Number of Joints Per Kit

(estimated only - varies depending on amount of adhesive applied per application)

SIZE	JOINTS PER KIT	SIZE	JOINTS PER KIT
3/4"	40	3"	15
1"	35	3-1/2"	13
1-1/4"	30	4"	10
1-1/2"	25	5"	8
2"	20	6"	6
2-1/2"	18	8"	4



BENDING HANDLES

Champion Bending Handles are made from machined steel and available for IPS and XW conduit sizes 3/4" through 2". These bending handles provide additional leverage during the field hand bending process when using a PVC hotbox.

	ITEM NO	CONDUIT SIZE (XW)
<input type="checkbox"/>	CBHX-075	3/4"
<input type="checkbox"/>	CBHX-100	1"
<input type="checkbox"/>	CBHX-125	1-1/4"
<input type="checkbox"/>	CBHX-150	1-1/2"
<input type="checkbox"/>	CBHX-200	2"



Champion Engineering Specifications

General

Fiberglass Conduit Specifications for Use Below Ground

The conduit shall be fiberglass conduit, also known as Reinforced Thermosetting Resin Conduit (RTRC), manufactured using the **single-circuit filament winding process**. Multi-circuit windings are not allowed. The conduit shall have a winding angle as close as possible to 54.75°.

- The resin system shall be epoxy based, with no fillers, using an anhydride curing agent. The fiberglass shall consist of continuous **E-glass “Grade A” roving**.
- The conduit shall not contain any halogen compounds containing chlorine, bromine, fluorine and iodine in more than trace amounts when burning.
- Conduit and elbows shall be manufactured from the same resin/hardener/glass systems manufactured by the same filament wound system.
- Fiberglass conduit fittings and accessories shall be manufactured using one of two manufacturing procedures.
 - The first method shall use the same process, methods and components as used to manufacture the fiberglass conduit.
 - The second method shall use the compression molding process, Sheet Molding Compound (SMC), for the manufacture of the finished component. The SMC material shall be a vinyl ester resin with +30% reinforcement of glass. The glass fibers should be approximately 1" in length. The SMC material shall be fire resistant to UL 2515.
- Conduit shall be integral bell and spigot or bonded coupling and spigot.
- Conduit, elbows and fittings are specified for use throughout a temperature range of -60°F (-51°C) to 250°F (121°C).
- Manufacturer shall have a current Certificate of Compliance, issued by an independent and accredited company, with an **ISO 9001: 2008 Quality Management System**.

Electrical Characteristics

Volume Resistivity	3.8 x 10 ¹⁴ ohm-cm	ASTM D257
Surface Resistivity	1.1 x 10 ¹⁴ ohms	ASTM D257
Dielectric Constant	3.5 (at 10 ³ cps)	ASTM D150
Dissipation Factor	0.005 (at 10 ³ cps)	ASTM D150
Dielectric Strength	500 volts/mil (19.7 kv/mm)	ASTM D149

Physical and Mechanical Characteristics

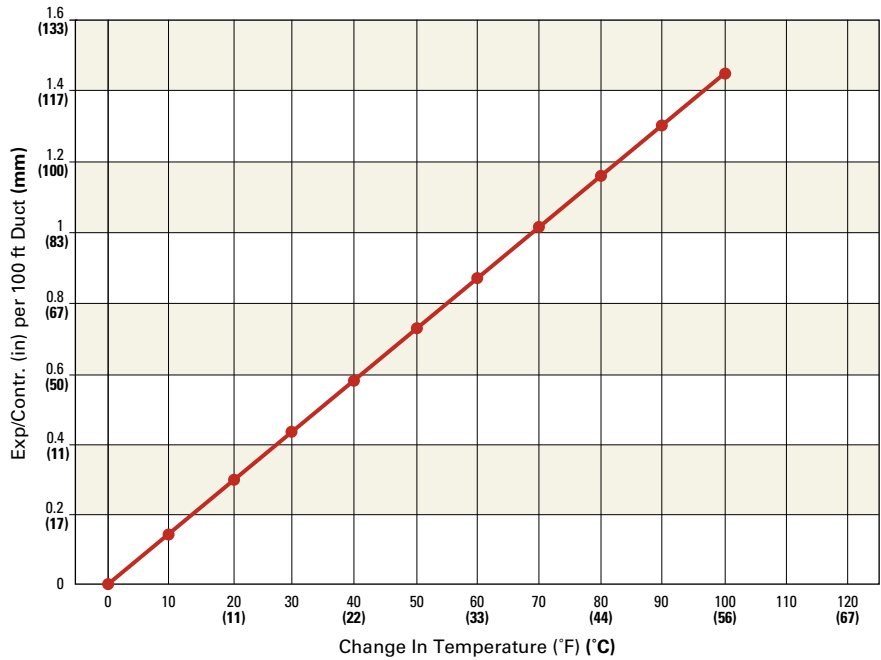
Tensile Strength, Axial	11,000 psi (76 MPa)	ASTM D2105
Compressive Strength, Axial	12,000 psi (83 MPa)	ASTM D695
Ultimate Elongation	2% psi (9.6 GPa)	ASTM D2105
Modulus of Elasticity (4" conduit)	1.4 x 10 ⁺⁶ psi (9.6 GPa)	ASTM D2105
Thermal Conductivity	2.0 Btu.in/ft ² .hr.°F (0.30 W/m.K)	ASTM D5930-1
Specific Gravity	1.9	ASTM D792
Glass Content	70% + 5%	API SPEC 15LR
Water Absorption	Less than 1%	ASTM D570
Barcol Hardness	54 + 2	ASTM D2583
Flammability Above Ground Conduit Below Ground Conduit	Conform to UL 2515 and CSA C22.2 HB Rating	No 211.3-96 UL 94
Coefficient of Thermal Expansion	1.2 x 10 ⁻⁵ in/in/°F (2.2 x 10 ⁻⁵ m/m/°C)	ASTM D696

Heat Distortion

The minimum heat distortion temperature shall be 230°F (110°C) when tested at 264 psi in accordance with ASTM D 648.

Joint Pullout

A 12" length shall be cut from both the belled end and spigot end of a length of conduit. The two parts shall be assembled in accordance with Champion's instructions. The assembly shall be tested in accordance with ASTM D 2105 and shall meet the requirements of the table below.



JOINT PULLOUT RESISTANCE / MINIMUM FORCE – LBS (N)						
NOMINAL SIZE	INTERFERENCE JOINT		GASKET WITH INTERFERENCE JOINT		GASKET WITHOUT INTERFERENCE JOINT	TIGHT LOCK JOINTS (ADHESIVE)
All	1,000	(4,450)	2,000	(8,900)	500 (2,220)	11,000 psi x (cross sectional area of conduit)

Toxicity

Champion Duct conduit does not contain any compounds that can release halogens – bromine or chlorine – when burning.

GASES	VALUES (MAX PPM)
Hydrogen Chloride	0
Hydrogen Bromide	0
Hydrogen Cyanide	<1
Hydrogen Sulfide	0
Ammonia	0
Aldehydes as HCHO	<10
Oxides of Nitrogen	<50
Carbon Dioxide	<12,500
Carbon Monoxide	<250

Surface Finish

- Exterior Surface: Normally less than 2,000 microinches (50.8 micron)
- Interior Surface: Normally less than 125 microinches (3.2 micron)

Available Colors

Standard colors are black and dark grey. Other optional colors are available. These include red, orange, blue and white, and additional colors beyond these options are also available as well. Contact Champion Fiberglass for additional information regarding colors.

Water Tightness

There should be no evidence of water leakage through the joint when tested in accordance to UL 2515 and CSA C22.2 No. 2515. In order to achieve water tightness use Champion Mix® or Epoxy Adhesive Kit for Tight Lock Joint.

Coefficient of Friction

The following data for static coefficient of friction is for dry conduit and non-lubricated cable at a temperature of 72°F (22°C).

CABLE MATERIAL	CONDUIT MATERIAL					
	EPOXY FIBERGLASS CONDUIT	PVC CONDUIT	STEEL CONDUIT	ALUMINUM CONDUIT	CONCRETE CONDUIT	POLYETHYLENE CONDUIT
PVC	0.38	0.90	0.57	0.61	0.95	1.90
XLP (Cross-linked Polyethylene)	0.23	0.90	0.75	1.50	0.75	2.00
LDPE (Polyethylene)	0.25	0.50	0.50	0.62	0.60	1.70
Neoprene	0.53	2.60	1.60	0.26	1.35	3.30
Concentric Neutral	0.16	–	–	–	–	–
Tech (Armored) Cable	0.16	2.60	1.60	0.26	1.35	3.30

Impact Resistance

The minimum impact resistance values for the conduit shall be as shown in the table below when tested in accordance with ASTM D2444.

NOMINAL SIZE	AT 73.4°F (23°C)		AT 32°F (0°C)	
	IMPACT RESISTANCE LBS/FT (NM)		IMPACT RESISTANCE LBS/FT (NM)	
	XW		XW	
3/4"	150	(202)	150	(202)
1"	400	(540)	400	(540)
1-1/4"	400	(540)	400	(540)
1-1/2"	500	(675)	500	(675)
2"	550	(742)	550	(742)
2-1/2"	600	(810)	600	(810)
3"	700	(945)	700	(945)
3-1/2"	850	(1,150)	850	(1,150)
4"	1,000	(1,350)	1,000	(1,350)
5"	1,200	(1,620)	1,200	(1,620)
6"	1,300	(1,755)	1,300	(1,755)



For high-impact situations as well as during cold weather, PVC can shatter and/or flatten.



For high-impact, steel conduit will collapse and can pinch the cable. This will make repair of damaged conduit more difficult.



XW conduit has the highest impact value of all conduit materials available. If impacted, it will flex back close to its original diameter. SW, MW and HW will also flex back similarly after impact. They will not shatter.

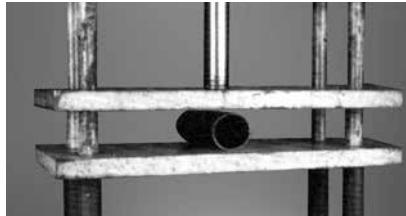
Stiffness

The minimum conduit stiffness at 5% deflection for all sizes of conduit shall not be less than the values given in table below when tested in accordance with ASTM D2412.

NOMINAL SIZE	PIPE STIFFNESS (PS) = (F/ΔY)			
	AT 73.4°F (23°C) LBF/IN ² (MPA)		AT 32°F (0°C) LBF/IN ² (MPA)	
	XW		XW	
3/4"	2,500	(17.5)	2,500	(17.5)
1"	2,400	(16.8)	2,400	(16.8)
1-1/4"	2,100	(14.7)	2,100	(14.7)
1-1/2"	2,000	(14)	2,000	(14)
2"	1,300	(9.0)	1,300	(9.0)
2-1/2"	800	(5.6)	800	(5.6)
3"	600	(4.1)	600	(4.1)
3-1/2"	450	(3.1)	450	(3.1)
4"	250	(1.7)	250	(1.7)
5"	180	(1.2)	180	(1.2)
6"	150	(1.0)	150	(1.0)



PVC Conduit
PVC conduit will stay compressed if it is crushed. (Same for steel conduit.)



Fiberglass Conduit
Epoxy Fiberglass conduit will flex back to almost its original shape after crushing.

Wire Fill

Maximum allowable percentage wire fill per National Electric Code.

TRADE SIZE	ID SIZES										
	INTERNAL DIAMETER		TOTAL AREA		PERCENT OF CROSS SECTION OF CONDUIT AND TUBING FOR CONDUCTORS						
	IN	(MM)	IN ²	(MM ²)	1 WIRE 53%		2 WIRE 31%		OVER 2 WIRE 40%		
				IN ²	(MM ²)	IN ²	(MM ²)	IN ²	(MM ²)	IN ²	(MM ²)
2" (51)	2.000"	(51)	3.142"	(2,027)	1.665"	(1,074)	0.974"	(628)	1.257"	(811)	
2-1/2" (64)	2.500"	(64)	4.909"	(3,167)	2.602"	(1,678)	1.522"	(982)	1.963"	(1,267)	
3" (76)	3.000"	(76)	7.069"	(4,560)	3.746"	(2,417)	2.191"	(1,414)	2.827"	(1,824)	
3-1/2" (89)	3.500"	(89)	9.621"	(6,207)	5.099"	(3,290)	2.983"	(1,924)	3.848"	(2,483)	
4" (102)	4.000"	(102)	12.566"	(8,107)	6.660"	(4,297)	3.896"	(2,513)	5.027"	(3,243)	
5" (127)	5.000"	(127)	19.635"	(12,668)	10.407"	(6,714)	6.087"	(3,927)	7.854"	(5,067)	
6" (152)	6.000"	(152)	28.274"	(18,241)	14.985"	(9,668)	8.765"	(5,655)	11.310"	(7,297)	

Conduit Conductor Fill

Based on Wire Fill Data as outlined in the national electric code.

RHW

TRADE SIZE	ID SIZES											
	ALLOWABLE CONDUIT IN ²	MAX 1 CONDUCTOR SIZE	IN ² OF 1 CONDUCTOR	ALLOWABLE CONDUIT IN ²	MAX 2 CONDUCT. SIZE	IN ² OF 2 CONDUCTORS	ALLOWABLE CONDUIT IN ²	MAX 3 CONDUCT. SIZE	IN ² OF 3 CONDUCTORS	ALLOWABLE CONDUIT IN ²	MAX 4 CONDUCT. SIZE	IN ² OF 4 CONDUCTORS
2" (51)	1.665"	1000	1.4784"	0.974"	250	0.9193"	1.257"	4/0	1.1153"	1.257"	3/0	1.2469"
2-1/2" (64)	2.602"	1750	2.4773"	1.522"	400	1.3237"	1.963"	350	1.7875"	1.963"	250	1.8385"
3" (76)	3.746"	2000	2.7818"	2.191"	600	1.9459"	2.827"	500	2.3704"	2.827"	400	2.6475"
3-1/2" (89)	5.099"	—	—	2.983"	900	2.7121"	3.848"	800	3.6816"	3.848"	500	3.1605"
4" (102)	6.660"	—	—	3.896"	1250	3.7205"	5.027"	1000	4.4353"	5.027"	800	4.9087"
5" (127)	10.407"	—	—	6.087"	2000	5.5636"	7.854"	1750	7.4319"	7.854"	1250	7.4409"
6" (152)	14.985"	—	—	8.765"	—	—	11.310"	2000	8.3455"	11.310"	2000	11.1273"

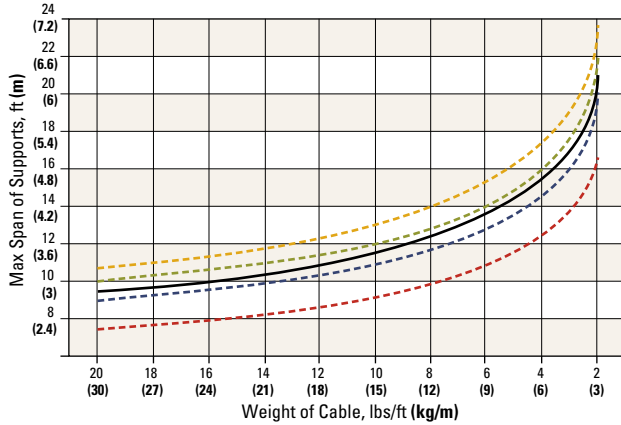
THHN

TRADE SIZE	ID SIZES											
	ALLOWABLE CONDUIT IN ²	MAX 1 CONDUCT. SIZE	IN ² OF 1 CONDUCTOR	ALLOWABLE CONDUIT IN ²	MAX 2 CONDUCT. SIZE	IN ² OF 2 CONDUCTORS	ALLOWABLE CONDUIT IN ²	MAX 3 CONDUCT. SIZE	IN ² OF 3 CONDUCTORS	ALLOWABLE CONDUIT IN ²	MAX 4 CONDUCT. SIZE	IN ² OF 4 CONDUCTORS
2" (51)	1.665"	1000	0.3237"	0.974"	300	0.9216"	1.257"	250	1.1910"	1.257"	3/0	1.0716"
2-1/2" (64)	2.602"	—	—	1.522"	500	1.4146"	1.963"	400	1.7589"	1.963"	300	1.8432"
3" (76)	3.746"	—	—	2.191"	750	2.0992"	2.827"	600	2.6028"	2.827"	400	2.3452"
3-1/2" (89)	5.099"	—	—	2.983"	1000	2.6956"	3.848"	900	3.6933"	3.848"	600	3.4704"
4" (102)	6.660"	—	—	3.896"	—	—	5.027"	1000	4.0434"	5.027"	900	4.9244"
5" (127)	10.407"	—	—	6.087"	—	—	7.854"	—	—	7.854"	1000	5.3912"
6" (152)	14.985"	—	—	8.765"	—	—	11.310"	—	—	11.310"	—	—

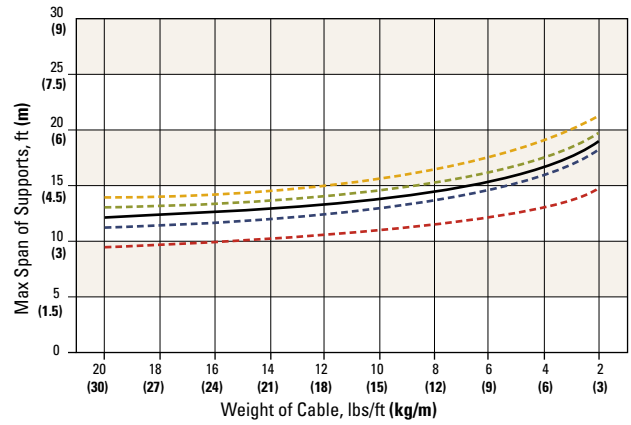
Deflection

Deflection is always determined at mid-span.

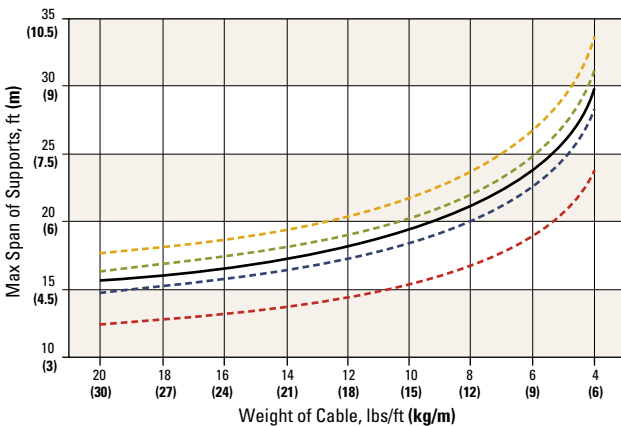
2" XW DIAMETER



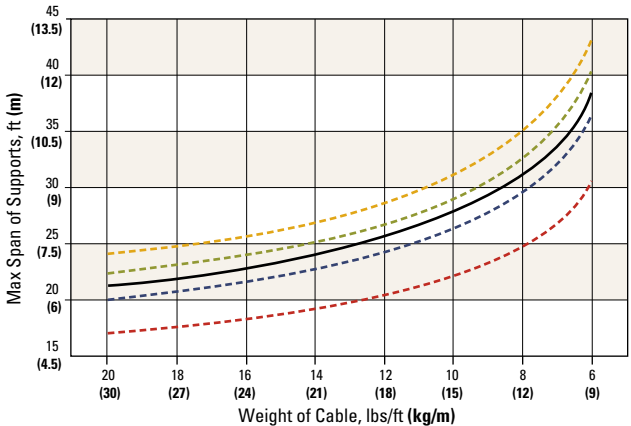
3" XW DIAMETER



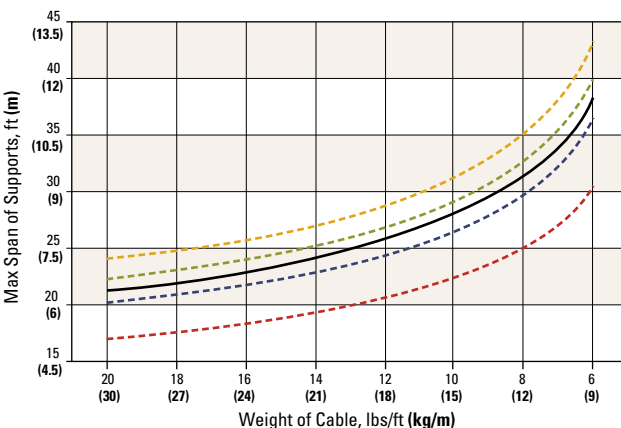
4" XW DIAMETER



5" XW DIAMETER



6" XW DIAMETER



It is recommended that mid-span deflection never exceeds 5/8 in (16 mm).

Above are easy graphs for determining support distance between hangers for various diameters and wall thicknesses of conduit.

Legend:

- 1/4" (6) Deflection
- 1/2" (13) Deflection
- 5/8" (16) Deflection
- 3/4" (19) Deflection
- 1" (25) Deflection
- D = Mid-span deflection (in)
- OD = Outside diameter of conduit (in)
- ID = Inside diameter of conduit (in)
- E = Modulus of elasticity of conduit (psi), which is 1,400,000 for epoxy fiberglass conduit
- L = Distance between hangers (ft)
- W = Total weight of cable and conduit (lbs/ft)

The empirical formula for deflection is:

$$D = \frac{131 \times W \times L^4}{E(OD^4 - ID^4)}$$

Corrosion Resistance Guide

The corrosion guidelines tests were performed by immersing epoxy coupons for 30 days in the chemical at the temperatures shown. This is a very severe test. It has been shown that Champion Duct® can often be used for chemicals listed as “Not Recommended” (NR) as real cases often are limited to fumes, vapors and occasional splashes at the temperatures indicated.

This information is provided solely as a guide since it is impossible to anticipate all individual site conditions. For specific applications which are not covered in this guide, and may require screening tests to evaluate resin system suitability, consultation with Champion Fiberglass is recommended.

UP TO TEMPERATURE, °F			UP TO TEMPERATURE, °F			UP TO TEMPERATURE, °F		
CHEMICAL	EPOXY CONDUIT		CHEMICAL	EPOXY CONDUIT		CHEMICAL	EPOXY CONDUIT	
	120°	210°		120°	210°		120°	210°
Acetaldehyde	N	N	Bromine, liquid	N	N	Dioxane – 1,4	–	–
Acetaldehyde, aq. 40%	N	N	Bromine, gas, 25%	N	N	Dimethylamine	N	N
Acetic Acid, glacial	N	N	Bromine, aq.	N	N	Dimethyl formamide	N	N
Acetic Acid, 20% (25)	R	C	Butane	R	R	Detergents, aq.	R	R
Acetic Acid, 80%	N	N	Butanetriol (erythriol)	–	–	Disbutylphthalate	R	N
Acetic Anhydride	N	N	Butanediol	–	–	Dibutyl sebacate	R	N
Acetone, 10%	N	N	Butyl Acetate	N	N	Dichlorobenzene	N	N
Adipic Acid	C	N	Butyl phenol	N	N	Dichlorethylene	N	N
Alcohol, allyl	N	N	Butyric acid <50%	R	R	Ether (diethyl)	N	N
Alcohol, benzyl	N	N	Calcium salts, aq.	R	R	Ethyl halides	N	N
Alcohol, butyl (n-butanol)	C	N	Calcium hypochlorite	C	N	Ethylene halides	N	N
Alcohol, butyl (2-butanol)	N	N	Calcium hydroxide, 100%	R	R	Ethylene glycol	R	R
Alcohol, ethyl	C	N	Cane sugar liquors	R	N	Ethylene oxide	N	N
Alcohol, hexyl	R	C	Carbon disulfide	N	N	Fatty acids	C	R
Alcohol, isopropyl (2-propanol)	C	N	Carbon dioxide	C	C	Ferric salts	R	R
Alcohol, methyl	N	N	Carbon dioxide, aq.	C	C	Fluorine, gas, dry	N	N
Alcohol, propyl (1-propanol)	R	N	Carbon monoxide	R	C	Fluorine, gas, wet	N	N
Allyl chloride	N	N	Carbon tetrachloride	R	N	Fluoroboric acid, 25%	R	R
Alum	R	C	Casein	R	R	Fluoroboric acid, 10%	C	N
Ammonia, gas	C	N	Castor oil	R	N	Formaldehyde	C	N
Ammonia, liquid	N	N	Caustic potash (KOH)	C	N	Formic acid	C	N
Ammonia, aq. 20%	–	–	Caustic soda (NaOH)	C	N	Freon, F11, F12, 113, 114	N	N
Ammonia salts, except fluoride	R	C	Chlorine, gas, dry	R	C	Freon, F21, F22	N	N
Ammonia fluoride, 25%	R	N	Chlorine, gas, wet	N	N	Fruit Juices and pulps	N	N
Amyl acetate	N	N	Chlorine, liquid	N	N	Fuel oil	R	C
Amyl chloride	R	N	Chlorine, water	C	N	Furfural	N	N
Aniline	N	N	Chloroacetic acid	R	N	Gas, natural, methane	R	N
Aniline hydrochloride	R	N	Chlorobenzene	N	N	Gasoline	N	N
Antimony trichloride	–	–	Chloroform	N	N	Gelatin	R	N
Aqua regia	–	–	Chlorosulfonic acid, 10%	N	N	Glycerine (glycerol)	R	R
Arsenic Acid, 80%	C	N	Chromic acid, 10%	N	N	Glycols	R	C
Aryl-sulfonic acid	R	R	Chromic acid, 30%	N	N	Glycolic acid	C	N
Barium salts	R	C	Chromic acid, 40%	N	N	Green Liquor–paper	R	N
Beer	C	N	Chromic acid, 50%	N	N	Heptane	R	R
Beet sugar liquor	R	N	Citric acid	R	R	Hexane	R	N
Benzaldehyde, 10%	–	–	Coconut oil	R	N	Hydrobromic acid, 25%	C	N
Benzaldehyde, 10–100%	N	N	Copper salts, aq.	R	R	Hydrobromic acid	C	N
Benzene (benzoin)	C	N	Corn oil	R	C	Hydrofluoric acid, 10%	R	N
Benzene sulfonic acid, 10%	R	R	Corn syrup	R	R	Hydrofluoric acid, 60%	N	N
Benzene sulfonic acid, 50%	C	N	Cottonseed oil	R	R	Hydrofluoric acid, 100%	N	N
Benzoic acid	R	R	Cresylic acid, 50%	N	N	Hydrocyanic acid	–	–
Black liquor–paper	R	C	Crude oil	R	R	Hydrogen peroxide, 50%	N	N
Bleach, 12.5% active chlorine	C	N	Cyclohexane	R	N	Hydrogen peroxide, 90%	N	N
Bleach, 5.5% active chlorine	C	N	Cyclohexanol	R	N	Hydrogen sulfide, dry	R	R
Borax	R	R	Cyclohexanone	–	–	Hydrazine	N	N
Boric acid	R	R	Diesel fuels	R	N	Hypochlorous acid, 10%	N	N
Brine	R	N	Diethyl amine	N	N	Jet fuels, JP 4 and JP5	R	N
Bromic acid, <50%	N	N	Diethyl phthalate	R	C	Kerosene	R	N

R = Generally resistant N = Generally not resistant C = Less resistant than "R" but still suitable for some conditions

CHAMPION ENGINEERING SPECIFICATIONS

UP TO TEMPERATURE, °F			UP TO TEMPERATURE, °F			UP TO TEMPERATURE, °F		
EPOXY CONDUIT			EPOXY CONDUIT			EPOXY CONDUIT		
CHEMICAL	120°	210°	CHEMICAL	120°	210°	CHEMICAL	120°	210°
Lauric acid	R	R	Perchloric acid, 10%	R	C	Tannic acid	R	R
Lauryl chloride	R	R	Perchloric acid, 70%	R	C	Tartaric acid	R	R
Lauryl sulfate	R	R	Perchloroethylene	R	C	Tetrachloroethane	C	N
Lead salts	R	R	Petroleum, sour	R	R	Tetrahydrofuran	N	N
Linoleic acid	R	N	Petroleum, refined	R	R	Thionyl chloride	N	N
Linseed oil	R	R	Phenol, 88%	N	N	Thread cutting oil	R	N
Lithium salts	R	R	Phenylcarbinol	N	N	Terpineol	R	R
Lubricating oils	R	N	Phenylhydrazine	N	N	Toluene	C	N
Machine oil	R	N	Phosphoric acid	C	R	Tributyl phosphate	R	N
Magnesium salts	R	R	Phosphorous, yellow	N	N	Tricresyl phosphate	R	N
Maleic acid	R	R	Phosphorous, red	N	N	Trichloroacetic acid	C	C
Manganese sulfate	R	R	Phosphorous trichloride	N	N	Trichloroethylene	N	N
Mercuric salts	R	R	Phthalic acid	R	R	Triethanolamine	R	N
Mercury	R	R	Potassium salts, aq.	R	R	Triethylamine	C	N
Methane	R	R	Potassium permanganate, 25%	C	C	Turpentine	R	N
Methyl acetate	N	N	Propane	R	R	Urea, 50%	R	N
Methyl bromide (gas)	N	N	Propylene dichloride	N	N	Urine	R	N
Methyl cellosolve	-	-	Propylene glycol	R	R	Vaseline	R	R
Methyl chloride	N	N	Propylene oxide	N	N	Vegetable oils	R	R
Methyl chloroform	N	N	Pyridine	N	N	Vinegar	R	R
Methyl cyclohexanone	N	N	Rayon coagulating bath	R	N	Vinyl acetate	N	N
Methyl methacrylate	N	N	Sea water	R	R	Water, distilled	C	N
Methylene bromide	N	N	Salicylic acid	R	N	Water, fresh	R	N
Methylene chloride	N	N	Sewage, residential	C	N	Water, mine	R	N
Methylene iodide	N	N	Silicic acid	R	R	Water, salt	R	N
Milk	R	R	Silicone oil	R	R	Water, tap	R	N
Mineral oil	R	R	Silver salts	R	R	Whiskey	R	N
Molasses	R	N	Soaps	R	R	Wines	R	C
Monochlorozenzene	N	N	Sodium hydroxide	N	N	Xylene	C	N
Monoethanolamine	N	N	Sodium salts, aq. Except	R	C	Zinc salts	R	R
Motor oil	R	R	Sodium chlorite, 10%	R	N			
Naphtha	R	N	Sodium chlorate	R	R			
Naphthalene	R	R	Sodium dichromate, acid	R	R			
Nickel salts	R	R	Stannic chloride	R	R			
Nitric acid, 0 to 20%	N	N	Stannous chloride	R	R			
Nitric acid, 21 to 100%	N	N	Stearic acid	R	R			
Nitric acid, fuming	N	N	Sulfite liquor	R	C			
Nitrobenzene	N	N	Sulfur	R	N			
Nitrous acid	R	N	Sugars, aq.	R	R			
Oleic acid	R	R	Sulfur dioxide, dry	R	R			
Oleum	N	N	Sulfur dioxide, wet	C	C			
Olive oil	R	R	Sulfur trioxide, gas, dry	R	R			
Oxalic acid	R	R	Sulfur trioxide, gas, wet	N	N			
Ozone, gas, 5%	C	N	Sulfuric acid, < 26%	R	N			
Palmitic acid, 10%	R	R	Sulfuric acid, 26 to 80%	C	N			
Palmitic acid, 70%	R	R	Sulfuric acid, 81 to 100%	N	N			
Paraffin	R	R	Sulfuric acid, 10%	R	N			

R = Generally resistant N = Generally not resistant C = Less resistant than "R" but still suitable for some conditions

- Temperatures represent standard test conditions and are not minimums or maximums. Champion Duct products may be acceptable at other temperatures for some chemicals, but should be tested to determine specific suitability.
- The recommendations or suggestions contained in this table are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory or field trial prior to use.

Installation Instructions

These instructions are intended to provide assistance only as a guide to obtain the most appropriate and satisfactory installation of Champion Fiberglass conduit systems.

These instructions are not intended to replace the responsibilities of engineers, customer representatives, owners or other persons responsible in establishing engineering design practices and procedures that are best suited for individual job site conditions.

Epoxy Conduit

Champion Fiberglass conduit maintains the following standards and listing compliances:

- UL 2420 (Below Ground)
- UL 2515 (Above Ground)
- Class I, Division 2 (XW)
- ISO 9001
- ISO 14001
- NEC (Article 355 – RTRC Conduit – Reinforced Thermoset Resin Conduit)
- CSA (Section 12-0200 thru 12-1220 Rigid RTRC Conduit CSA)

Notes:

- All conduit sections are provided with belled ends.
- No couplings are required for straight sections.
- Standard conduit lengths are 10 and 20 ft.
- Standard conduit colors are black and grey with special colors available upon request.
- Standard and long radius elbows are available as well as elbows with special radii upon request.
- Conduit bodies with threaded hubs are available upon request.

Scope

These instructions cover recommendations for above/below ground installation procedures, Class I, Division 2 installation procedures, joining of conduit sections, repair of damaged conduit section (with and without installed cable), shipping, handling and storage of Champion Fiberglass epoxy RTRC conduit systems.

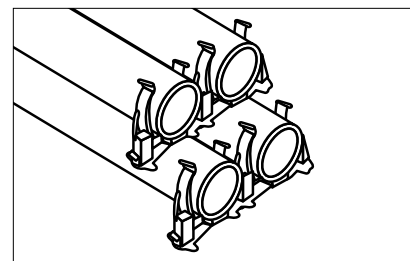
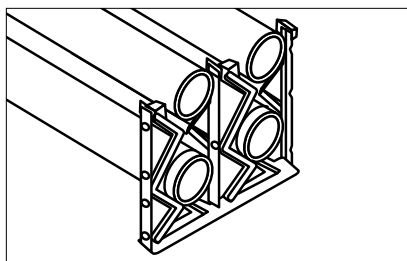
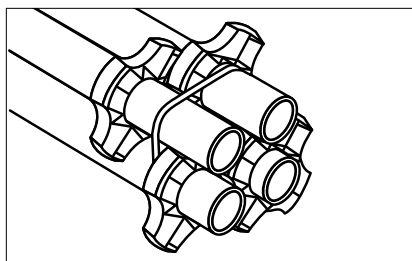
Concrete Encasement and Direct Burial

Extra Heavy Wall (XW – .250" wall, 3/4" thru 12" diameters) conduits are approved for concrete encasement and direct burial systems.

Conduit Spacers

There are many different configurations of commercially available spacers.

- **Encased Burial** conduit separation can be achieved by the use of commercially available spacers. An adequately designed spacer will have more flow area and sacrificial grout pipe holes.
- **Direct Burial** conduit separation spacers must meet the specifications of the design engineer. The spacers must be designed for such use and appropriate backfill material and its compaction must be specified as well. Proper design engineering must be applied for the use of direct burial spacers otherwise excessive conduit point load deflections may result.
- **Spacing Considerations:** Stock spacers provide 1-1/2", 2" and 3" conduit separations.



Underground Installation

Proper Installation

- **Conduit** is properly installed if the inside diameter of each duct is adequate to allow the passage of the specified deflection mandrel.
- **To limit deflection**, special attention should be paid to trench bedding, duct separation, spacer interval, type of backfill material and amount of compaction.

Trench Excavation

- All federal, state and local regulations should be followed.
- Routing of the underground conduit should be coordinated with all utility companies.
- The **trench dimensions** should be determined
 - The trench depth is determined by the height of the duct bank plus the minimum required cover over the duct bank.
 - The trench width is determined by the duct bank width plus a three-inch space on each side to accommodate the backfill and/or shoring materials.
- Trench Wall
 - Unstable soil conditions should be stabilized before laying the duct. Well points or under drains may be required to control excessive groundwater conditions.
 - Soil conditions may require shoring. Duct should not be disturbed by removal of shoring materials.
- Trench Bottom
 - The trench bottom should be smooth and free of any debris that may impede the spacer positioning.
 - Rocky bottom trenches may require a layer of compactable bedding material.
 - For direct burial applications, bedding must be uniformly graded for continuous duct support.
 - Blocking or mounding should not be used to raise the duct to grade.
 - Unstable trench bottoms may require crushed stone or gravel bedding to provide duct stability.
 - The maximum bedding particle size should be one inch.

Trenchless (Steel Casing) Applications

The trenchless application grouting process is very technical; it should only be undertaken by a grouting contractor who completely understands and has considered all aspects of the process. Special attention should be given to the following applications:

- Jack and Bore
- Microtunnel/Tunneling
- Horizontal Directional Drilled Bores (HDD)
- Auger Bore

The grouting contractor must fully understand and take special consideration of:

- The buckling pressures of the RTRC conduit when pumping or pouring grout.
- The use of conduit spacers and their grout flow capabilities inside the casing. (A properly designed spacer will have more flow area and sacrificial grout pipe holes.)
- A congested bore will restrict grout flow and may require higher grouting pressures or a more fluid grout than will an open, less congested bore.
- Inclined Jack and Bores are exposed to increased hydrostatic head pressure and dynamic pumping pressures.
- Grouting is best performed from the high side of a Jack and Bore, utilizing the longest sacrificial grout pipe and working upward with subsequently shorter pipes. (In level short bores, an experienced grout specialist may use a single mid-span grout pipe.)
- The proper use of concrete admixtures can significantly improve the performance of all cementitious grouts.
- Grout line pressure must be monitored at the point of injection. The pressure gauges on the concrete pump are not sufficient – the pump operator must be aware of grout line pressure at all times. Back pressure, not line pressure, is what contributes to conduit damage.
- In trenchless applications, grout is pumped into a sealed environment. Vents should always be installed at both ends, regardless of bore pitch. They should be sized at the same or larger diameter than the largest injection pipe.



- As a general rule, all RTRC conduits should be filled with water prior to pumping and pressurized where grouting pressures could potentially damage the conduit.
- All conduit bundles should be pushed into the steel casing as this applies the least amount of stress to the conduit adhesive joint connections.
- In trenchless grouting, maximum pressure occurs during the grouting operation, yet maximum temperature from heat of hydration occurs hours later.
- A properly designed and executed grout plan should be established prior to any grouting. Having a qualified trenchless grouting specialist assist on even the smallest projects can prevent major headaches.
- Any grout (cellular, flowfill, thermal, etc.) should be designed by someone experienced in trenchless applications. Most calls to ready-mix companies for a pumpable grout will not result in the delivery of the correct mix.
- **Remember:** A pumpable grout does not need to be flowable; a flowable grout may not be pumpable. **Trenchless grouting applications require both.**

If you have concerns or need additional information regarding this specialized grouting installation process, please contact Champion Fiberglass directly.

Note: This information is to be used only as a guideline. Champion Fiberglass is not a grouting contractor, nor does it represent itself as such. Please contact a qualified grouting specialist for detailed project specifics.

Field Cutting

To make conduit field cuts, the tools required are a fine tooth handheld hack saw, porta-band saw or a chop saw with a diamond cutting blade. Marking the fiberglass conduit for cutting will require a contrasting colored marker. Remove any cutting burrs or ridges with 60-grit emery cloth.

Proper field cutting PPE to include:

- Long sleeve clothing
- Gloves
- Safety glasses
- Particulate respirator (3M N95 or equivalent)



For further information, use your smart phone's camera or QR code scanner to view the **Champion Field Cutting Video**.

Bonding/Adhesive Joint Connections

The adhesive connections between conduit sections, elbows and conduit bodies are made with Champion's two-part epoxy adhesives (Champion Mix®). Care should be taken to choose the correct adhesive for the job site ambient temperature when the adhesive will be used. There are three adhesive tube sizes and temperature ranges and curing rates to choose from.

ITEM NO	SIZE	TEMPERATURE RANGE	APPROXIMATE CURING TIME
CM-570	50 ML	70°F (21°C) and above	30–45 minutes
CM-570-FG	50 ML	70°F (21°C) and above	20–30 minutes
CM-570-SFG	50 ML	70°F (21°C) and above	3–7 minutes
CM-540	50 ML	40°–70°F (4°C–21°C)	30–45 minutes
CM-540-FG	50 ML	40°–70°F (4°C–21°C)	20–30 minutes
CM-540-SFG	50 ML	40°–70°F (4°C–21°C)	3–7 minutes
CM-1070	80 ML	70°F (21°C) and above	30–45 minutes
CM-1070-FG	80 ML	70°F (21°C) and above	20–30 minutes
CM-1070-SFG	80 ML	70°F (21°C) and above	3–7 minutes
CM-1040	80 ML	40°–70°F (4°C–21°C)	30–45 minutes
CM-1040-FG	80 ML	40°–70°F (4°C–21°C)	20–30 minutes
CM-1040-SFG	80 ML	40°–70°F (4°C–21°C)	3–7 minutes
CM-2070	300 ML	70°F (21°C) and above	30–45 minutes
CM-2070-FG	300 ML	70°F (21°C) and above	20–30 minutes
CM-2070-SFG	300 ML	70°F (21°C) and above	3–7 minutes
CM-2040	300 ML	40°–70°F (4°C–21°C)	30–45 minutes
CM-2040-FG	300 ML	40°–70°F (4°C–21°C)	20–30 minutes
CM-2040-SFG	300 ML	40°–70°F (4°C–21°C)	3–7 minutes

Once the correct adhesive is chosen, the parts can be prepared for bonding. This is achieved by sanding the areas to be bonded with 60-grit emery cloth. The surfaces to be bonded should be sanded until the factory finish (sheen) is removed. These surfaces would include field-cut conduit ends, sleeve and expansion couplings (interior) and fitting hubs (interior). Sanding is easily accomplished with minimal time and effort. All factory conduit and plain elbow ends come pre-sanded.



Apply the Champion Mix[®] two-part epoxy adhesive to the conduit ends. NEVER apply adhesive to the inside of sleeve couplings or fitting sleeves as this could potentially cause the adhesive to drip inside the conduit/ fittings and possibly interfere with the cable pulling process. Champion Mix is designed to permanently bond fittings and the joints of fiberglass reinforced epoxy conduit. It is also designed for use with pultruded polyester and vinyl ester fiberglass components.



For further information, use your smart phone's camera or QR code scanner to view the **Champion Bonding Epoxy Conduit Video**.

Champion Mix – Two-part Epoxy Adhesive Cartridges

Estimated Number of Joints Per Container

(estimated only – varies depending on amount of adhesive applied per application)

50 ML		150 ML		300 ML	
SIZE	JOINTS PER CONTAINER	SIZE	JOINTS PER CONTAINER	SIZE	JOINTS PER CONTAINER
3/4"	16	3/4"	50	3/4"	100
1"	14	1"	43	1"	85
1-1/4"	12	1-1/4"	37	1-1/4"	75
1-1/2"	10	1-1/2"	30	1-1/2"	60
2"	8	2"	25	2"	50
2-1/2"	6	2-1/2"	20	2-1/2"	40
3"	5	3"	17	3"	35
3-1/2"	5	3-1/2"	15	3-1/2"	30
4"	4	4"	12	4"	25
5"	3	5"	10	5"	20
6"	2	6"	7	6"	15



For further information, use your smart phone's camera or QR code scanner to learn more about **Champion's Epoxy Adhesive Calculator**.

Assembly

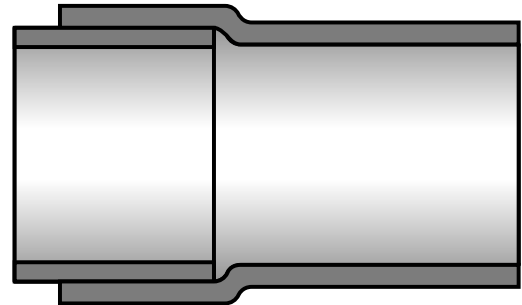
Conduit Joining Systems

Straight Socket Joint

The Straight Socket Joint connection can be used for above and below ground applications.

Some features of the Straight Socket Joint connection are:

- Consists of bell and spigot.
- Spigot easily slides into belled end.
- Intended for use with Champion Mix® epoxy adhesive.
- High pull-out strength.
- Concrete tight and water-tight joint.
- Straight Socket joining system is provided with all diameters of XW conduits.



To learn more about how to assemble the Straight Socket Joint connection, please see the installation video on our website.

* Straight Socket Joint connection is available for sizes 2" through 8" upon request, otherwise interference straight joint provided when available.



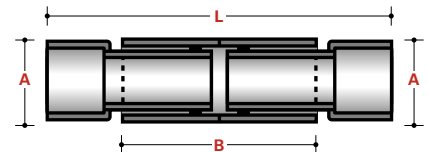
For further information, use your smart phone's camera or QR code scanner to view the **Champion Interference and Gasket Joint Assembly Video**.

Expansion Joints

Expansion joints are available in a wide selection of styles and total movement lengths. Special length movement expansion joints are available upon request. The expansion and contraction of epoxy conduit is usually larger and independent of any expansion and contraction of the structure or bridge.

Expansion Joint Spacing Requirements:

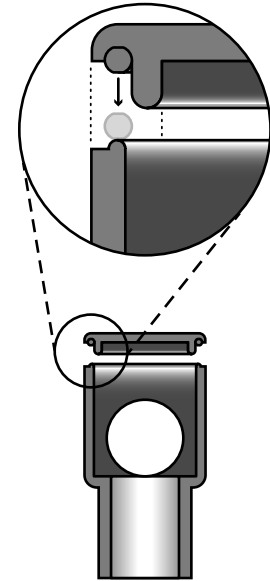
- Conduit runs less than 50 ft - no expansion joint required
- 50-200 ft conduit runs - one joint required in the center of the run
- Conduit runs over 200 ft - one joint required every 200 ft
- Expansion joints should be installed at the 1/4 point of the span whenever possible.



TEMP CHANGE °F	CONDUIT LENGTH CHANGE (INCHES PER/100 FT)	TEMP CHANGE °F	CONDUIT LENGTH CHANGE (INCHES PER/100 FT)
5°	.09"	60°	1.08"
10°	.18"	80°	1.44"
20°	.36"	100°	1.80"
40°	.72"	120°	2.16"

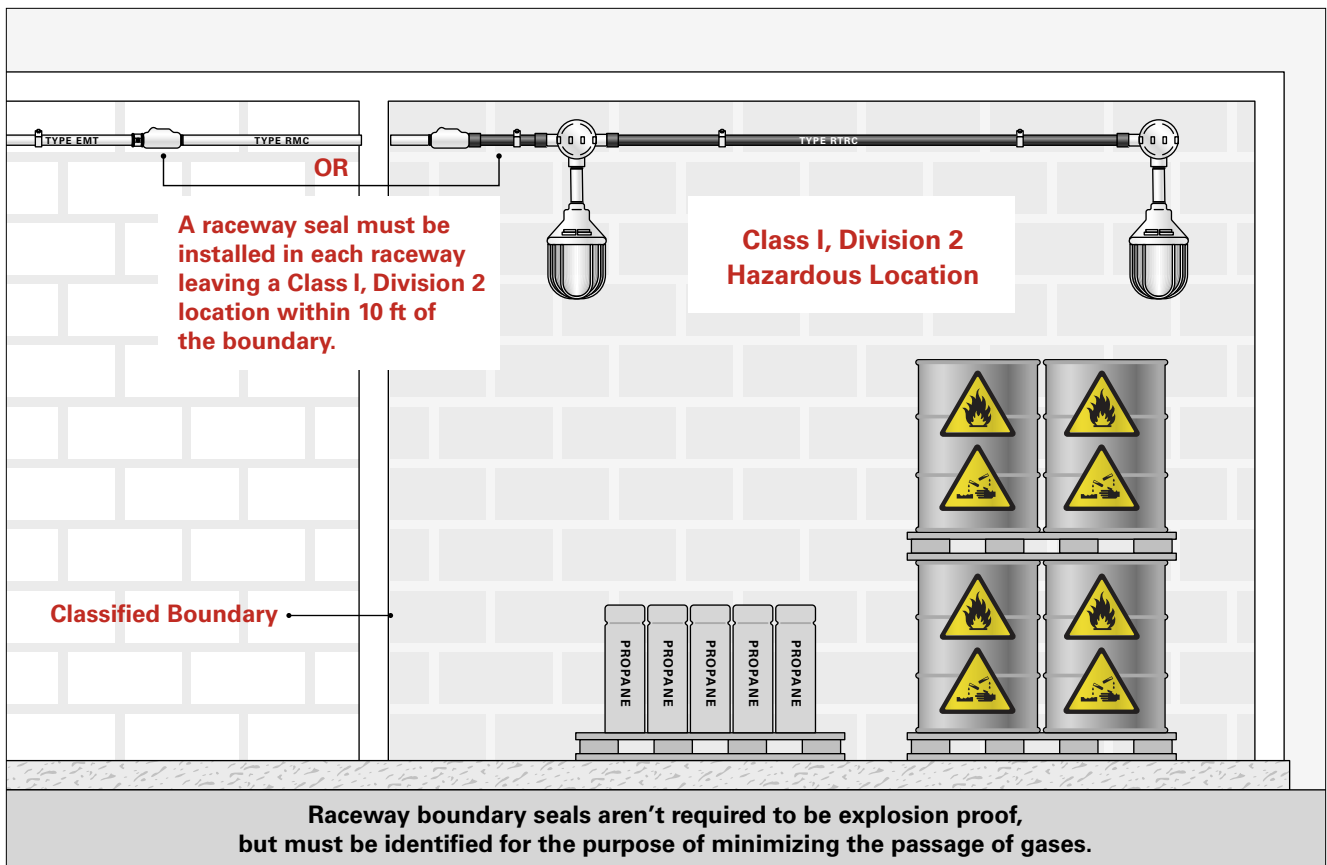
Conduit Bodies

Champion Fiberglass conduit bodies are available in LBs, Cs, LLs, LRs, Ts, TBs and Xs. They are compression molded from vinyl ester resin and are supplied with stainless steel cover set screws and a high-performance silicon gasket which provides a water-tight, corrosion-resistant seal between the cover and conduit body. Each conduit body will be supplied with Champion's unique "Champ-Seal" gasketing system. This is a silicon-based, water-tight and corrosion-resistant gasketing system that completely resists impression setting. Conduit bodies can also be provided with threaded hub inserts upon request. Conduit bodies are connected to conduit straight lengths with Champion Mix two-part epoxy adhesive.



Class I, Division 2 (Zone 2)

Champion Fiberglass Haz Duct® XW conduit (XW - .250" wall thickness) can be used in Class I, Division 2 hazardous areas as illustrated below:



Field Bending

In order to field bend Champion Fiberglass Conduit, you will need a PVC hot-box and a one shot hydraulic conduit bender. Care should be taken to choose the correct sized PVC hot-box based on the outside diameter of the conduit and length of the bend. Begin the bending process by heating the conduit to be bent in the PVC hot-box to 240°F (116°C). The conduit should be rolled while being heated and the temperature should be periodically checked with a digital thermometer until it reaches 240°F (116°C). Once the conduit reaches 240°F, place it into the bender and bend it to the desired radius (consult factory for RTRC minimum bending radii).

Once the elbow is bent, it is recommended to let it cool while still in the bender. The cooling process can be shortened by using a cool wet rag or running cool water over the bent elbow prior to removing it from the bender.

Field bending is governed by **Article 355** in the **National Electric Code**. Bends shall be made so that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Field bends shall be made only with bending equipment identified for that purpose. The radius of the curve to the centerline of such bends shall not be less than shown in the **NEC Article 355**.

Check the Champion Fiberglass catalog elbows section to verify the specific bending radius selected. Generally, it is difficult to field bend a tighter radius than what can be done at the factory.

The process for field bending is relatively simple. The conduit is heated in a standard PVC hot-box, and then bent with bending equipment identified for this purpose.

National Electric Code (NEC): Radius of Conduit and Tubing Bends

SIZE OF CONDUIT		OTHER BENDS	
TRADE SIZE	METRIC DESIGNATOR	IN	MM
3/4"	21	5"	127.0
1"	27	6"	152.4
1-1/4"	35	8"	203.2
1-1/2"	41	10"	254.0
2"	53	12"	304.8
2-1/2"	63	15"	381.0
3"	78	18"	457.2
3-1/2"	91	21"	533.4
4"	103	24"	609.6
5"	129	30"	762.0
6"	155	36"	914.4

For the XW sizes listed below, the heating time ranges from approximately 45 seconds to 65 seconds depending on the temperature of the hot-box and the size of the conduit. After heating, immediately place conduit in the bending equipment and begin to bend. It is extremely important that the proper bending equipment is used. Allow the bend to cool at the desired angle.

CONDUIT SIZE (IN)		APPROX HEATING TIME TO BEND (SEC)
3/4"	XW	45
1"	XW	50
1-1/4"	XW	50
1-1/2"	XW	55
2"	XW	65
2-1/2"	XW	65



When installing field bent fiberglass conduit, the elbow or offset should immediately be installed and supported by conduit straps on both ends of the elbow and offset.



For further information, use your smart phone's camera or QR code scanner to view the **Champion Fiberglass Bending Epoxy Conduit Video**.

Bridge Hangers

Champion's bridge hanger installation video details where to install the hangers (spacing) and shows how to locate the conduit expansion joints, split ring anchors and anchor hangers.



For further information, use your smart phone's camera or QR code scanner to view the **Champion Fiberglass Bridge Hanger Video**.

Handling and Storage

Transportation

Conduit is shipped in self-supporting crates designed to be unloaded by forklift. Crates should not be dropped from the truck trailer flatbeds. Conduit may also be shipped via enclosed vans in bundles. Care should be taken to avoid prolonged storage in enclosed vans as excessive stacking weight and elevated temperatures may cause the bottom rows of conduits to become oval in shape. Elbows are shipped with banding which should not be removed until the elbows are ready to be installed. Elbows should be stored in a cool, shaded area if possible.

Packaging Information for Conduit

NOMINAL SIZE	ID (TUBULAR SIZE)		
	TRUCKLOAD QUANTITIES (FT)	CRATE QUANTITIES (FT)	APPROX CRATE DIMENSIONS (FT)
3/4"			
1"			
1-1/4"			
1-1/2"			
2"	*	3,000'	4' x 2' x 20'
3"	34,560'	4,320'	4' x 4' x 20'
3-1/2"	25,760'	3,220'	4' x 4' x 20'
4"	18,240'	2,280'	4' x 4' x 20'
5"	12,000'	1,500'	4' x 4' x 20'
6"	8,320'	1,040'	4' x 4' x 20'

* Contact Champion Fiberglass directly for information and XW conduit packaging.

Storage

- **Conduit** crates should be stored on a level surface. The wooden frames should line up so the load will be transferred to the wood frames rather than the conduit. The height of stacked conduit should be limited to twelve feet.
- **Elbows and accessories**, when stored outdoors, should be under cover to protect items in cartons from the outdoor elements. Elbows are shipped with banding which should not be removed until the elbows are ready to be installed. Elbows should be stored in a cool, shaded area if possible.
- **Epoxy adhesives** should be stored at room temperature except when in use on the job site. Adhesives should not be stored in freezing areas as this will cause handling problems during the application process.



Limited Warranty

This warranty covers any Champion Fiberglass, Inc. ("Champion Fiberglass") electrical conduit products ("Product"). Subject to the terms and conditions of this warranty, Champion Fiberglass warrants that the Product is free from defects in workmanship and materials for a period of one (1) year from the date of purchase. During the applicable terms of this warranty, and subject to the terms and conditions thereof, in the event that the Product is proven to be defective and the defect is not caused by any misuse or damage to the Product while in the possession of the user, Champion Fiberglass will remedy the failure or defect without charge to the user except for labor. The remedy will consist of repair or replacement of the Product and or defective part, at Champion Fiberglass's option. Repair will be made, at Champion Fiberglass's option, either at user's location or at a facility designated by Champion Fiberglass. Any replacement part provided under this warranty assumed as its warranty period only the unexpired term of this warranty, which is fixed when such part replaces a defective part. This warranty does not cover defects, failure or damages caused by normal wear and tear, act of God, accident, misuse or unreasonable use of the Product, lack of proper maintenance, fire, flood, or any circumstances or events beyond Champion Fiberglass's control.

Champion Fiberglass's sole obligation under this warranty is to repair or replace the Product, as provided herein. Champion Fiberglass shall have no liability for any direct, incidental, special or consequential damages resulting from breach of this or any other warranty (no warranty being implied from this reference) on the Product. Except to the extent prohibited by applicable law, any implied warranty, including without limitation, of merchantability or fitness for any particular purchase with respect to the Product, is limited in duration to the term of this warranty. This warranty is in lieu of any other express warranties and of any other obligation on the part of Champion Fiberglass. Any other express warranties are expressly excluded and disclaimed. No Champion Fiberglass representative is authorized to give any warranty (other than this warranty) with respect to the Product, and any such warranty given by a Champion Fiberglass representative shall not constitute a Champion Fiberglass warranty or be binding in any respect upon Champion Fiberglass.

Note: Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusion may not apply to you. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

To obtain performance of any obligation of Champion Fiberglass under this warranty, the user must provide proof of the date of purchase, notify Champion Fiberglass of any warranty claim at the following address:

CHAMPION FIBERGLASS, INC.
6400 Spring Stuebner Rd
Spring, TX 77389
Attention: Warranty Claims
Telephone: 281.655.8900

Notify the nearest Champion Fiberglass authorized representative for inspection of the Product. For the name of the nearest authorized representative, refer to our website: www.championfiberglass.com / Locate a Rep Tab / or you can contact our corporate offices for the appropriate Representative's contact information. Any written correspondence can be mailed to our corporate offices at the address above.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

NO RETURNS ALLOWED ON PRODUCTS SHIPPED TO JOB SITES.





6400 Spring Stuebner Rd
Spring, TX 77389
Main: 281.655.8900
Fax: 281.257.2523
championfiberglass.com