

UNISTRUT®

TELESPAR® TELESCOPING SQUARE TUBING for Industrial & OEM Applications

VERSATILE, REUSABLE, ECONOMICAL

Use the Telespar System to fill your building needs in almost any application: racks, shelving, ceiling grids, conveyor systems, interior partitions, adjustable platforms, material handling devices, scaffolds, strapping machines, hangers, support members, protective railings, sign supports, etc. No special welding, tools or assembly procedures are necessary with the Telespar System.

One of the secrets to Telespar's versatility is its ability to telescope.

Smaller sizes fit smoothly and snugly into the next larger size. This is made possible by the latest in high-speed roll-forming technology with high-frequency resistance welding. This produces smooth corner welds within very close tolerances, reducing your fabrication costs.

Telespar standard perforated tubing comes in eight sizes, from 1¼" to 2½" square, in 10 and 12 gauge. Perforated holes are 7/16" spaced on 1" centers, except for 1¼" which have 11/32" holes on 1" centers. Sections without holes are available in all sizes.

Telespar comes in two standard finishes: Pre-Galv Plus™ and plain (lightly oiled) surface. The Telespar System includes a complete line of zinc-electroplated fittings, fasteners and accessories for splicing, extending and reinforcing.



Printed in U.S.A. 0608 TSP-2

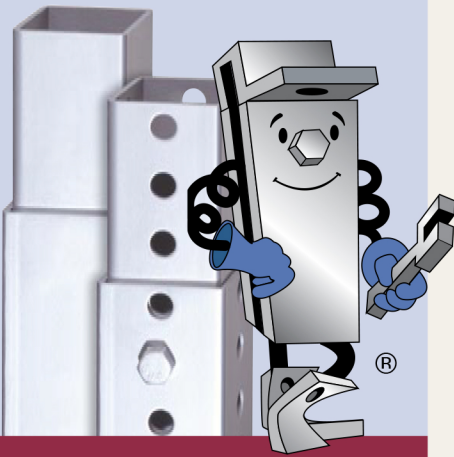


tyco

Electrical &
Metal Products

START SOLVING PRODUCT DESIGN & IN-PLANT CONSTRUCTION PROBLEMS TODAY...

Telespar Telescopic Tubing is among the world's best known and most trusted engineering support systems...and for good reason. It's a complete system, designed and manufactured to exacting quality standards. For more information call your nearest Telespar tubing representative.



CALCULATION OF TELESCOPED BEAM LOADING

Example: 12 Gauge Tubing

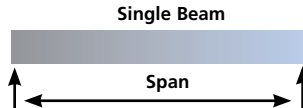
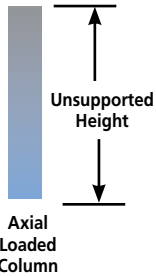
When consecutive size tubes are telescoped one inside another, beam loads from charts on pages 2 –3 are additive. Deflections for spans 5 feet and over will be approximately the same as for the larger tube. Deflections for shorter spans will show a slight increase.

Beam Loads: Allowable uniformly distributed loads are listed for various simple spans (beam on two supports). If load is concentrated at center of span, multiply load from table by 0.5 and corresponding deflection by 0.8

Allowable Loads— Calculated per the American Iron and Steel Institute "Specification for the Design of Cold-Formed Steel Structural Members".

Deflection 1/240 Span— Recommended for use where the amount of deflection is required to be imperceptible.

Column Loads: Column loadings are for allowable axial loads for the unsupported heights listed. Eccentric loads should be reduced according to standard practice.



	Size	Span Feet	Uniform Beam Load- Lbs.	Deflection Inches
Tubing with perforation	1½" Sq.	8	478	1.23
	1¾" Sq.	8	730	
	1½" & 1¾" telescoped	8	1208	1.23
Tubing with no perforation	1½" Sq.	10	517	1.69
	1¾" Sq.	10	744	
	2" Sq.	10	1009	1.69
	1½" & 1¾" & 2" Sq. telescoped	10	2270	

BEAM & COLUMN DATA - 10 GAUGE [.135] WALL THICKNESS

Non-Perforated						Perforated			
Beam Span or Column Unsupported Height	Tube Size	Maximum Allowable Uniform Load Pounds	Deflection at Uniform Load Inches	Uniform Load @ Max. Defl. 1/240 Span	Maximum Column Load	Maximum Allowable Uniform Load Pounds	Deflection at Uniform Load Inches	Uniform Load @ Max. Defl. 1/240 Span	Maximum Column Load
18"	2¾" x 2¾"	9,734	0.03	-	20,200	8,591	0.03	-	15,800
18"	2½" x 2½"	13,361	0.03	-	23,600	11,403	0.03	-	19,200
24"	2¾" x 2¾"	7,305	0.06	-	19,800	6,450	0.06	-	15,500
24"	2½" x 2½"	10,023	0.05	-	23,200	8,552	0.05	-	18,800
30"	2¾" x 2¾"	5,832	0.10	-	19,300	5,163	0.10	-	15,100
30"	2½" x 2½"	8,014	0.09	-	22,800	6,844	0.09	-	18,500
36"	2¾" x 2¾"	4,861	0.14	-	18,700	4,295	0.15	-	14,700
36"	2½" x 2½"	6,674	0.12	-	22,200	5,701	0.12	-	18,000
42"	2¾" x 2¾"	4,165	0.18	3,912	18,200	3,678	0.20	3,240	14,200
42"	2½" x 2½"	5,728	0.17	-	21,700	4,887	0.17	-	17,600
48"	2¾" x 2¾"	3,652	0.24	2,995	17,600	3,218	0.26	2,480	13,800
48"	2½" x 2½"	5,005	0.21	4,695	21,100	4,283	0.21	4,010	17,200
60"	2¾" x 2¾"	2,916	0.38	1,916	16,200	2,575	0.40	1,590	12,700
60"	2½" x 2½"	4,007	0.33	3,005	19,800	3,416	0.33	2,570	16,200
72"	2¾" x 2¾"	2,431	0.55	1,330	14,700	2,154	0.58	1,100	11,700
72"	2½" x 2½"	3,336	0.48	2,090	18,500	2,850	0.48	1,780	15,200
84"	2¾" x 2¾"	2,089	0.75	980	13,100	1,839	0.79	810	10,500
84"	2½" x 2½"	2,864	0.65	1,530	16,900	2,444	0.65	1,310	14,000
96"	2¾" x 2¾"	1,826	0.97	750	11,200	1,616	1.04	620	9,100
96"	2½" x 2½"	2,509	0.85	1,170	15,400	2,141	0.85	1,000	12,800
108"	2¾" x 2¾"	1,616	1.23	590	9,300	1,432	1.31	490	7,700
108"	2½" x 2½"	2,220	1.08	930	13,600	1,905	1.08	790	11,300
120"	2¾" x 2¾"	1,458	1.52	480	7,500	1,288	1.62	400	6,200
120"	2½" x 2½"	2,010	1.33	750	11,800	1,708	1.33	640	9,900

BEAM & COLUMN DATA - 12 GAUGE [.105] WALL THICKNESS

Non-Perforated						Perforated			
Beam Span or Column Unsupported Height	Tube Size	Maximum Allowable Uniform Load Pounds	Deflection at Uniform Load Inches	Uniform Load @ Max. Defl. 1/240 Span	Maximum Column Load	Maximum Allowable Uniform Load Pounds	Deflection at Uniform Load Inches	Uniform Load @ Max. Defl. 1/240 Span	Maximum Column Load
18"	1¼" x 1¼"	2,178	0.06	-	8,130	1,634	0.06	-	-
18"	1½" x 1½"	3,439	0.05	-	10,255	2,537	0.05	-	6,950
18"	1¾" x 1¾"	4,954	0.04	-	12,365	3,891	0.04	-	9,000
18"	2" x 2"	6,719	0.04	-	14,480	5,485	0.04	-	11,070
18"	2¼" x 2¼"	8,751	0.03	-	16,595	7,344	0.03	-	13,155
18"	2½" x 2½"	11,036	0.03	-	18,780	9,469	0.03	-	15,200
24"	1¼" x 1¼"	1,634	0.10	1,530	7,655	1,226	0.10	1,150	-
24"	1½" x 1½"	2,590	0.09	-	9,830	1,899	0.09	-	6,680
24"	1¾" x 1¾"	3,705	0.08	-	11,990	2,922	0.08	-	8,750
24"	2" x 2"	5,033	0.06	-	14,120	4,103	0.06	-	10,800
24"	2¼" x 2¼"	6,560	0.06	-	16,245	5,511	0.06	-	12,890
24"	2½" x 2½"	8,274	0.06	-	18,420	7,105	0.06	-	14,970

BEAM & COLUMN DATA - 12 GAUGE [.105] WALL THICKNESS

Non-Perforated						Perforated			
Beam Span or Column Unsupported Height	Tube Size	Maximum Allowable Uniform Load Pounds	Deflection at Uniform Load Inches	Uniform Load @ Max. Defl. 1/240 Span	Maximum Column Load	Maximum Allowable Uniform Load Pounds	Deflection at Uniform Load Inches	Uniform Load @ Max. Defl. 1/240 Span	Maximum Column Load
30"	1 1/4" x 1 1/4"	1,302	0.17	975	7,165	977	0.17	735	-
30"	1 1/2" x 1 1/2"	2,072	0.14	1,840	9,410	1,514	0.14	1,350	6,400
30"	1 3/4" x 1 3/4"	2,974	0.12	-	11,570	2,338	0.12	-	8,450
30"	2" x 2"	4,024	0.10	-	13,710	3,294	0.10	-	10,530
30"	2 1/4" x 2 1/4"	5,246	0.10	-	15,920	4,409	0.10	-	12,590
30"	2 1/2" x 2 1/2"	6,614	0.08	-	18,060	5,684	0.09	-	14,690
36"	1 1/4" x 1 1/4"	1,089	0.24	680	6,620	817	0.24	510	-
36"	1 1/2" x 1 1/2"	1,726	0.20	1,275	8,900	1,262	0.20	940	6,090
36"	1 3/4" x 1 3/4"	2,470	0.18	2,140	11,105	1,939	0.18	1,680	8,130
36"	2" x 2"	3,360	0.15	3,320	13,330	2,736	0.15	2,710	10,200
36"	2 1/4" x 2 1/4"	4,369	0.14	-	15,500	3,678	0.14	-	12,300
36"	2 1/2" x 2 1/2"	5,511	0.12	-	17,690	4,741	0.12	-	14,380
42"	1 1/4" x 1 1/4"	930	0.33	500	5,980	698	0.33	375	-
42"	1 1/2" x 1 1/2"	1,474	0.27	940	8,350	1,089	0.27	690	5,760
42"	1 3/4" x 1 3/4"	2,125	0.23	1,570	10,610	1,660	0.23	1,240	7,820
42"	2" x 2"	2,882	0.21	2,440	12,850	2,350	0.21	1,990	9,890
42"	2 1/4" x 2 1/4"	3,745	0.18	3,575	15,060	3,147	0.18	3,000	11,970
42"	2 1/2" x 2 1/2"	4,728	0.17	-	17,270	4,064	0.17	-	14,060
48"	1 1/4" x 1 1/4"	823	0.43	380	5,330	618	0.43	285	-
48"	1 1/2" x 1 1/2"	1,288	0.36	720	7,750	956	0.36	530	5,370
48"	1 3/4" x 1 3/4"	1,859	0.31	1,200	10,080	1,461	0.31	950	7,440
48"	2" x 2"	2,523	0.27	1,870	12,350	2,058	0.27	1,520	9,510
48"	2 1/4" x 2 1/4"	3,280	0.24	2,735	14,590	2,762	0.24	2,300	11,600
48"	2 1/2" x 2 1/2"	4,130	0.22	3,840	16,850	3,546	0.22	3,290	13,710
60"	1 1/4" x 1 1/4"	650	0.66	240	3,820	488	0.66	185	-
60"	1 1/2" x 1 1/2"	1,036	0.56	460	6,490	757	0.56	340	4,580
60"	1 3/4" x 1 3/4"	1,487	0.48	770	8,920	1,169	0.48	610	6,660
60"	2" x 2"	2,018	0.42	1,200	11,230	1,646	0.42	980	8,730
60"	2 1/4" x 2 1/4"	2,630	0.38	1,750	13,560	2,205	0.38	1,470	10,850
60"	2 1/2" x 2 1/2"	3,306	0.34	2,460	15,820	2,842	0.34	2,110	12,960
72"	1 1/4" x 1 1/4"	545	0.96	170	2,680	409	0.96	125	-
72"	1 1/2" x 1 1/2"	863	0.81	320	4,980	638	0.82	230	3,640
72"	1 3/4" x 1 3/4"	1,235	0.69	540	7,615	970	0.69	420	5,740
72"	2" x 2"	1,674	0.60	830	10,080	1,368	0.61	680	7,870
72"	2 1/4" x 2 1/4"	2,191	0.54	1,220	12,420	1,833	0.54	1,020	9,950
72"	2 1/2" x 2 1/2"	2,762	0.49	1,710	14,740	2,364	0.48	1,460	12,130
84"	1 1/4" x 1 1/4"	465	1.30	120	1,960	349	1.31	95	-
84"	1 1/2" x 1 1/2"	744	1.11	230	3,690	545	1.10	170	2,740
84"	1 3/4" x 1 3/4"	1,062	0.94	390	6,170	837	0.94	310	4,770
84"	2" x 2"	1,434	0.82	610	8,720	1,169	0.82	500	6,920
84"	2 1/4" x 2 1/4"	1,873	0.74	890	11,260	1,580	0.74	750	9,050
84"	2 1/2" x 2 1/2"	2,363	0.66	1,250	13,660	2,032	0.66	1,080	11,220
96"	1 1/4" x 1 1/4"	412	1.73	100	-	310	1.74	70	-
96"	1 1/2" x 1 1/2"	650	1.45	180	2,810	478	1.45	130	2,090
96"	1 3/4" x 1 3/4"	930	1.23	300	4,750	730	1.23	240	3,750
96"	2" x 2"	1,262	1.08	470	7,330	1,029	1.08	380	5,880
96"	2 1/4" x 2 1/4"	1,646	0.96	680	9,900	1,383	0.96	570	8,070
96"	2 1/2" x 2 1/2"	2,071	0.86	960	12,325	1,779	0.86	820	10,250
108"	1 1/4" x 1 1/4"	358	2.14	80	-	269	2.14	55	-
108"	1 1/2" x 1 1/2"	571	1.81	140	2,240	425	1.83	100	1,660
108"	1 3/4" x 1 3/4"	823	1.55	240	3,760	650	1.56	190	2,940
108"	2" x 2"	1,115	1.36	370	5,810	916	1.37	300	4,760
108"	2 1/4" x 2 1/4"	1,461	1.22	540	8,430	1,222	1.21	450	7,010
108"	2 1/2" x 2 1/2"	1,833	1.09	760	11,000	1,580	1.09	650	9,200
120"	1 1/4" x 1 1/4"	332	2.72	60	-	250	2.72	45	-
120"	1 1/2" x 1 1/2"	518	2.26	110	-	385	2.27	80	-
120"	1 3/4" x 1 3/4"	744	1.93	190	3,050	584	1.93	150	2,390
120"	2" x 2"	1,010	1.69	300	4,850	823	1.69	240	3,810
120"	2 1/4" x 2 1/4"	1,314	1.50	440	6,890	1,102	1.50	370	5,780
120"	2 1/2" x 2 1/2"	1,660	1.35	610	9,590	1,421	1.34	530	8,070

SPECIFICATIONS

Tubing shall be TELESPAR® tubing conforming to manufacturers' standards. Tubing shall be corner welded by high-frequency resistance welding and externally scarfed to agree with corner radii.

MATERIALS

Tubing with plain finish is roll formed from 10 gauge (.135) and 12 gauge (.105 U.S.S. Gauge) hot rolled steel, ASTM Des. A-1011 Grade 50, pickled and oiled. Galvanized finish, roll formed from 10 gauge (.135) and 12 gauge (.105 U.S.S. Gauge) hot rolled steel, galvanized material ASTM A-653 Grade 50. Average minimum yield strength after cold forming is 60,000 PSI.

STANDARD FINISHES

Plain - Material has oiled finish as the material comes from the rolling mills. Tubes must be thoroughly cleaned before protective finishes are applied.

Pre-Galv Plus™ - Galvanized conforming to ASTM specification A-653 des. G-90. Corner weld is zinc coated after scarfing operation. Tubing then receives a conversion coating and a clear organic polymer topcoat.

Wall thickness tolerance - Permissible variation in wall thickness is +.011, -.005 inches.

Convexity and concavity - Measured in the center of the flat side, tolerance is ±.010 inch applied to the specific size determined at the corner.

Straightness tolerance - Permissible variation in straightness is 1/16" in 3 feet.

Corner radii - Standard corner radius is 5/32" ±1/64".

Weld Flash - Weld flash on corner welded square tubing shall permit 9/64" radius gauge to be placed in the corner.

Telescoping - Using 10 gauge (.135) or 12 gauge (.105) square tube, consecutive size tubes shall telescope freely for ten feet.

Length tolerance - To allow for subsequent cutting - tubes without holes - standard length members are 3/8" ±1/8" longer. Tubes with holes - standard length members are 2" ±1/8" longer. Tubes can be furnished in special lengths. Standard pre-galvanized lengths are 20' and 24', standard plain finish length is 24'.

Hole tolerance - Tolerance on hole size is ±1/64" on a 7/16" hole size. Tolerance on hole spacing ±1/8" in 10 feet.

SQUARENESS OF SIDES AND TWIST

Nominal Outside Dimension, Inches	Squareness Tolerance, Inch*	Twist Permissible in 3 Ft., Incht
1 1/4" x 1 1/4"	± .007	.050
1 1/2" x 1 1/2"	± .009	.050
1 3/4" x 1 3/4"	± .010	.062
2" x 2"	± .012	.062
2 3/16" x 2 3/16"	± .014	.062
2 1/4" x 2 1/4"	± .014	.062
2 1/2" x 2 1/2"	± .015	.075

* TELESPAR tubing may have its sides failing to be 90° to each other by the tolerance listed.

† Twist is measured by holding down the edge of one end of a square tube on a surface plate with the bottom side of the tube parallel to the surface plate and noting the height that either corner on the opposite end of the bottom side is above the surface plate.

TOLERANCES

Tolerance On Size	
Nominal Outside Dimension, Inches	Outside Tolerance for All Sides at Corners, Inch*
1 1/4" x 1 1/4"	± .006
1 1/2" x 1 1/2"	± .006
1 3/4" x 1 3/4"	± .008
2" x 2"	± .008
2 3/16" x 2 3/16"	± .010
2 1/4" x 2 1/4"	± .010
2 1/2" x 2 1/2"	± .010

COMPONENTS

FITTINGS DIMENSIONS

Fittings*	Tube Size	Cutting Dimensions**	Fittings*	Tube Size	Cutting Dimensions**
TL015† T-Fitting	1 1/2" sq. 1 3/4" sq. 2" sq. 2 1/4" sq. 2 1/2" sq.	1 3/16" 1 1/16" 1 5/16" 1 3/16" 1 1/16"	TL020 90° Offset Fitting	1 1/2" sq. 1 3/4" sq. 2" sq. 2 1/4" sq. 2 1/2" sq.	1 3/16" 1 1/16" 1 5/16" 1 3/16" 1 1/16"
TL016† L-Fitting	1 1/2" sq. 1 3/4" sq. 2" sq. 2 1/4" sq. 2 1/2" sq.	1 3/16" 1 1/16" 1 5/16" 1 3/16" 1 1/16"	TL092 TL094 Lock Pin	1 1/2" sq. 1 3/4" sq. 2" sq. 2 1/4" sq. 2 1/2" sq.	N/A
TL018 Straight Fitting	1 1/2" sq. 1 3/4" sq. 2" sq. 2 1/4" sq. 2 1/2" sq.	N/A	TL017 Anti-Rotation Fitting	1 1/2" sq. 1 3/4" sq. 2" sq. 2 1/4" sq. 2 1/2" sq.	1" 1" 1" 1" 1"

* Standard Unistrut® channel fittings will not work on Telespar®.

† Both tubes must be same size.

** Distance from end of tube to center of first hole.

CONNECTING BOLTS

Part No.	Description	Use with Tube Sizes
B516S	Corner Bolt	1 1/2", 1 3/4", 2"
B516M	Corner Bolt	2 1/4", 2 1/2"
NH516	5/16" Heavy Hex Jam Nut	All
TL092EG	3/8" Lock Pin	1 1/2", 1 3/4", 2"
TL094EG	3/8" Lock Pin	2 1/4", 2 1/2"
DR3878	Drive Rivet	All

Tubing holes are 7/16" diameter, one inch on center, which accommodates standard 3/16" or 3/8" bolts. All corner bolts are 5/16" diameter.



ELEMENTS OF SECTION

I-Moment of Inertia S-Section Modulus r-Radius of Gyration K-Torsional Factor

Non-Perforated										Perforated						
Tube Size	Wall Thickness U.S. Std. Gauge	Part No.	Area Sq. In.	Wt. Ft. Lbs.	I In.⁴	S In.³	r In.	K	Allowable Moment in Lbs.	Part No.	Area Sq. In.	Wt. Ft. Lbs.	I In.⁴	S In.³	r In.	Allowable Moment in Lbs.
1 1/4" x 1 1/4"	12 (.105)	12F10	0.459	1.560	0.093	0.148	0.450	0.158	4,874	12F12	0.315	1.427	0.070	0.112	0.472	3,688
1 1/2" x 1 1/2"	12 (.105)	14F10	0.564	1.917	0.175	0.234	0.557	0.285	7,706	14F12	0.380	1.702	0.129	0.172	0.582	5,664
1 3/4" x 1 3/4"	12 (.105)	16F10	0.669	2.274	0.294	0.336	0.663	0.467	11,065	16F12	0.485	2.060	0.231	0.264	0.690	8,694
2" x 2"	12 (.105)	20F10	0.774	2.631	0.456	0.456	0.768	0.715	15,018	20F12	0.590	2.416	0.372	0.372	0.794	12,251
2 1/4" x 2 1/4"	12 (.105)	22F10	0.879	2.988	0.668	0.594	0.872	1.036	19,563	22F12	0.695	2.773	0.561	0.499	0.898	16,434
2 1/2" x 2 1/2"	12 (.105)	24F10	0.987	3.356	0.937	0.749	0.974	1.443	24,667	24F12	0.803	3.141	0.804	0.643	1.001	21,176
2 3/16" x 2 3/16"	10 (.135)	21H10	1.077	3.662	0.731	0.668	0.824	1.167	22,000	21H12	0.841	3.432	0.605	0.590	0.848	19,431
2 1/2" x 2 1/2"	10 (.135)	24H10	1.248	4.236	1.146	0.917	0.959	1.786	30,200	24H12	1.010	4.006	0.979	0.783	0.985	25,787