



Brass Component Railing System (Series 400)

TSM ClassicBrass components can be combined to create upright, wall-hung, stair and ramp railings. The flexibility of the **TSM ClassicBrass** system gives a custom look to any application. Components are simple to work with in the field, making even stairway and ramp configurations easy to install, and brass tubing is easy to cut.

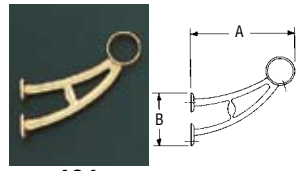
An extensive offering of components that can be combined in infinite patterns is only the beginning. Beyond the full line "parts and pieces" inventory lies a complete range of custom capabilities. TSM can accommodate not only unusual bends and radii but is ready to tackle such challenges as creative welding of oversize tubing, for example. Send us your drawing for a free estimate.

BRASS COMPONENTS AND TUBING: Brass (copper alloy - approximately 60% copper and 40% zinc). Formed construction components fit 1½" and 2" O.D. tubing (38&51mm). Chrome plating is available but is not recommended for components intended for use as footrails.

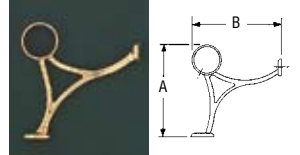
STAINLESS STEEL TUBING - Type 304 (18-8) 18 gauge (1.2mm). Available in 1½" and 2" O.D. (38 & 51mm) in a smooth bright finish and in 1½" in non-slip Ripple Grip™ bright finish.

Ak-Sar-Ben

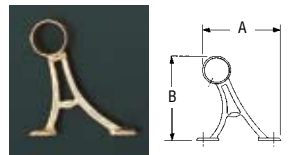
Omaha, Nebraska • Architect: Leo A. Daly • 2" O.D. Bright Finish Brass Service
Bar Rail and Custom Bent Armrail and Footrail
Models #BT-458, #BT-405, #BT-415, #BT-429 and #BT-494



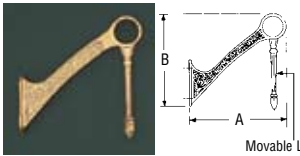
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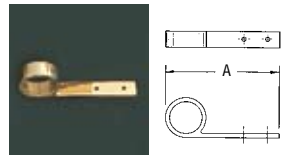
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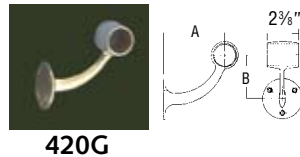
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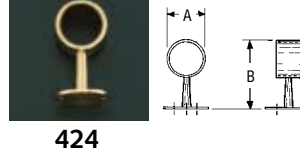
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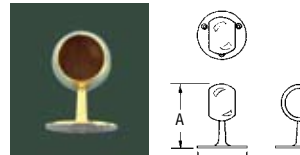
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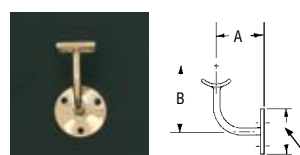
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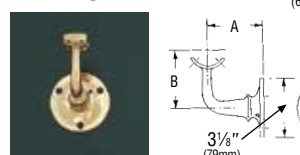
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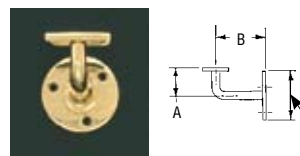
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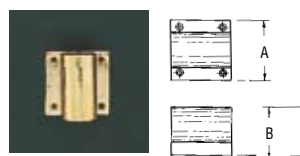
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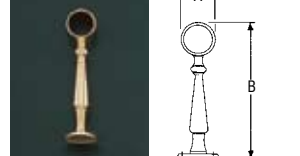
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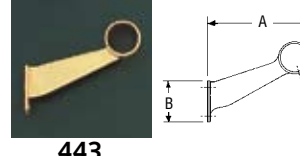
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443

BRASS BRACKETS

Description	1½" O.D.	A	B	2" O.D.	A	B	TECH DATA
401 Bar Wall Bracket Footrail bracket fastens to wall. Top flange has 5/16"-18 threaded mounting hole that requires either access from back or a 3/16" pilot hole about 1" deep to be used with a hanger bolt (supplied by others). Tubing fits inside circular sleeve.	BH-401	7¼" (184mm)	4" (102mm)	BT-401	8¾" (213mm)	4¼" (108mm)	TECH DATA
402 Bar Wall/Floor Bracket Fastens to wall with two surface mounted screw holes; the other leg rests on the floor but is not screwed into it. Tubing fits inside circular sleeve.	BH-402	6¾" (162mm)	7¾" (187mm)	BT-402	7" (178mm)	7½" (181mm)	TECH DATA
403 Bar Floor Bracket Fastens to floor with two surface mounted screw holes. Tubing fits inside circular sleeve.	BH-403	5¼" (133mm)	6¾" (175mm)	BT-403	6¼" (159mm)	7" (178mm)	TECH DATA
404 Bar Wall Bracket with Movable Leg Filigreed footrail bracket fastens to wall with four screw holes. Movable leg swings up to facilitate cleaning. Tubing fits inside circular sleeve.	BH-404	9½" (241mm)	8¾" (219mm)	BT-404	10" (254mm)	9" (229mm)	TECH DATA
405 Arm Rail Bracket Tubing fits inside circular sleeve bracket that fastens to underside of bar with two screw holes.	BH-405	6¾" (168mm)		BT-405	6¾" (175mm)		TECH DATA
420G Wall Bracket, Rounded Fastens to wall with two surface mounted screw holes. Tubing fits inside circular sleeve.	N/A			BT-420G	5½" (140mm)	5½" (140mm)	TECH DATA
424 Center Post Has two surface mounted screw holes. Tubing fits inside circular sleeve.	BH-424	1¾" (45mm)	3¼" (83mm)	BT-424	2¼" (57mm)	4¾" (111mm)	TECH DATA
424A Rounded Center Post Same as 424.	BH-424A	3⅝" (92mm)	2½" (75mm)	BT-424A	4⅝" (111mm)	3⅝" (76mm)	TECH DATA
425 Wall Saddle Bracket Fastens to wall with three surface mounted screw holes. Tubing attaches to bracket with set screws provided by TSM.	BH-425	2⅝" (67mm)	3" (76mm)	BT-425	2⅝" (67mm)	3⅝" (92mm)	TECH DATA
425G Wall Saddle Bracket, Large Same as 425.	N/A			BT-425G	3⅝" (86mm)	3½" (89mm)	TECH DATA
426 Wall Flat Bracket Same as 425.	N/A			BT-426	1⅝" (35mm)	2½" (64mm)	TECH DATA
431 Side Mount Bracket Same as 424 with four screw holes.	N/A			BT-431	3¼" (83mm)	3¾" (95mm)	TECH DATA
436 Bar Straight Floor Bracket Same as 424.	BH-436	1¾" (45mm)	6¼" (172mm)	BT-436	2¼" (57mm)	9¾" (248mm)	TECH DATA
443 Square Wall Bracket Same as 420G with four screw holes.	N/A			BT-443	7⅝" (194mm)	3" (76mm)	TECH DATA



409



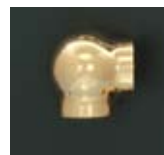
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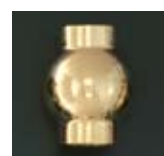
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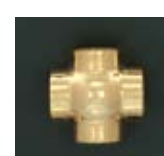
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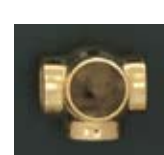
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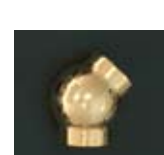
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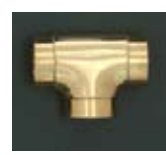
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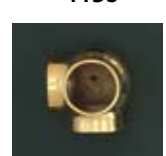
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421

FLUSH ELBOWS & TEES

	1½" O.D.	A	B	2" O.D.	A	B	TECH DATA
409 Flush Angle @ 135° Angle ends fit inside tubing.	BH-409	1¼" (32mm)	1¼" (32mm)	BT-409	2" (51mm)	2" (51mm)	TECH DATA
410 Flush Elbow, Rounded Elbow ends fit inside tubing.	BH-410	2¾" (70mm)		BT-410	3" (76mm)		TECH DATA
411 Flush Elbow, Square Elbow ends fit inside tubing.	BH-411	1⅞" (48mm)	1⅞" (48mm)	BT-411	2⅝" (54mm)	2⅝" (54mm)	TECH DATA
412 Flush Elbow Side Outlet Elbow ends fit inside tubing.	BH-412	1⅞" (48mm)	1⅞" (48mm)	BT-412	2¼" (57mm)	2¼" (57mm)	TECH DATA
413 Flush Tee Side Outlet Tee ends fit inside tubing.	BH-413	1⅞" (49mm)	1¾" (45mm)	BT-413	2½" (64mm)	2¼" (57mm)	TECH DATA
415F Flush Tee Tee ends fit inside tubing.	BH-415F	1⅞" (49mm)	1¾" (45mm)	BT-415F	2½" (62mm)	2¼" (57mm)	TECH DATA
416F Flush Cross Cross ends fit inside tubing.	BH-416F	1⅞" (49mm)	1⅞" (49mm)	BT-416F	2½" (64mm)	2½" (64mm)	TECH DATA

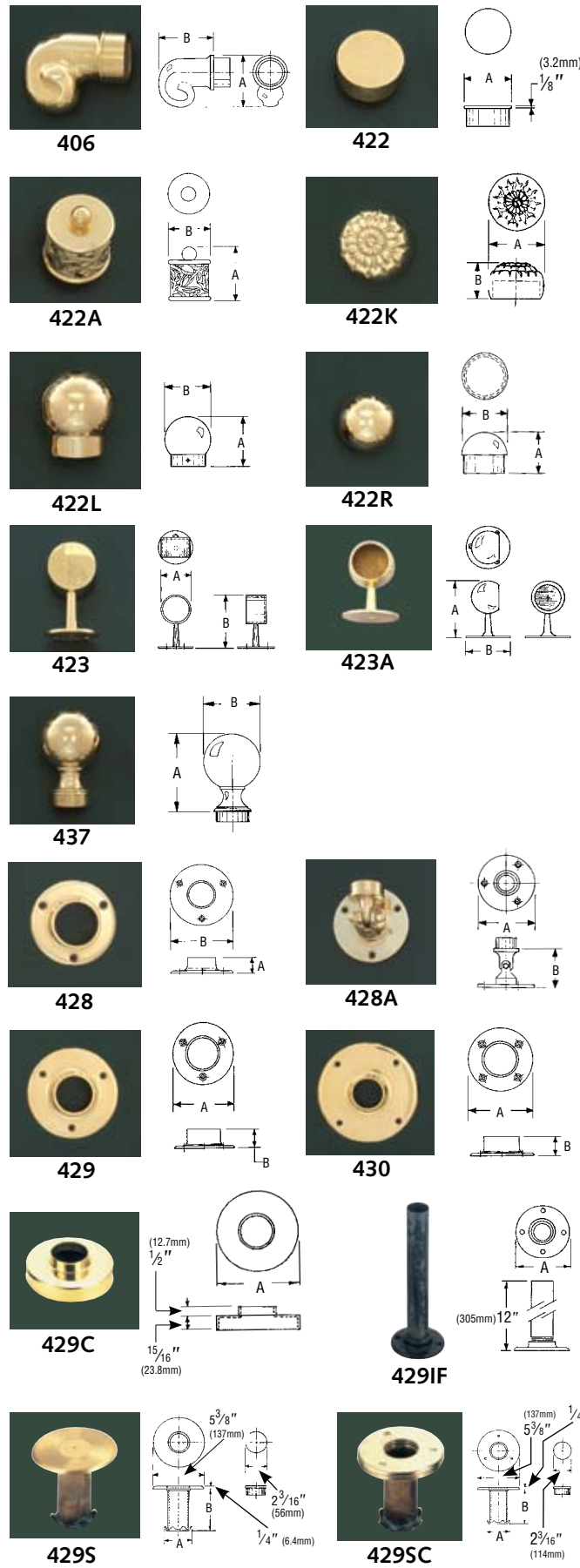
BALL ELBOWS & TEES

	1½" O.D.	A	B	2" O.D.	A	B	TECH DATA
414 Ball Elbow Elbow ends slip over tubing.	BH-414	2¾" (70mm)	2¾" (70mm)	BT-414	3⅝" (86mm)	3⅝" (86mm)	TECH DATA
415 Ball Tee Tee ends slip over tubing.	BH-415	3" (76mm)	2¾" (70mm)	BT-415	3⅝" (92mm)	3¼" (83mm)	TECH DATA
415P Thru Center Ball Tubing fits through ball ends.	BH-415P	2½" (64mm)	2½" (75mm)	BT-415P	3⅝" (86mm)	4" (105mm)	TECH DATA
415S Ball Tee Side Outlet 135° Tubing fits through ball ends with two 135° side connections.	BH-415S	3⅝" (79mm)		BT-415S	4⅝" (105mm)		TECH DATA
416 Ball Cross Same as 415S except side connections are at 90°.	BH-416	2¾" (70mm)	2⅞" (62mm)	BT-416	3⅝" (92mm)	2⅞" (75mm)	TECH DATA
417 Ball Elbow Side Outlet Elbow ends slip over tubing.	BH-417	2¾" (70mm)	2¾" (70mm)	BT-417	3⅝" (86mm)	3⅝" (86mm)	TECH DATA
418 Ball Tee Side Outlet Same as 416.	BH-418	2⅝" (67mm)		BT-418	3¼" (83mm)		TECH DATA
419 Ball Cross Side Outlet Same as 416.	BH-419	2⅝" (73mm)	2⅝" (67mm)	BT-419	3½" (89mm)	3⅞" (87mm)	TECH DATA
420 Ball Elbow @ 135° Elbow ends slip over tubing.	BH-420	2½" (64mm)		BT-420	3" (76mm)		TECH DATA
421 Ball Elbow Side Outlet @ 135° Elbow ends slip over tubing.	BH-421	2¾" (70mm)		BT-421	3⅝" (81mm)		TECH DATA



Ak-Sar-Ben

Omaha, Nebraska
Architect: Leo A. Daly
2" O.D. Bright Finish Brass
Model #BT-424 with Miter Cuts and
Plugged Weld Terminals to Conform to Door Opening



ENDS AND TOPS

	1 1/2" O.D.	A	B	2" O.D.	A	B
406 End Scroll Scroll end fits inside tubing.	BH-406	2 3/4" (70mm)	2 3/4" (70mm)	BT-406	3" (76mm)	3" (76mm)
422 Flat End Cap End cap fits inside tubing.	BH-422	1 1/2" (38mm)		BT-422	2" (51mm)	
422A Filigree End Cap End cap slips over tubing.	BH-422A	2 7/8" (73mm)		BT-422A	2 3/8" (60mm)	
422K Decorative End Cap End cap slips over tubing.	BH-422K	1 7/8" (48mm)	1 1/8" (29mm)	BT-422K	2 3/8" (60mm)	1 1/2" (38mm)
422L Ball End Ball end slips over tubing.	BH-422L	2 7/8" (73mm)	2 3/8" (60mm)	BT-422L	3 1/4" (89mm)	2 7/8" (73mm)
422R Dome End Cap, Flush End cap fits inside tubing.	BH-422R	1 1/2" (38mm)	1 1/2" (38mm)	BT-422R	1 3/4" (45mm)	2" (51mm)
423 End Post Tubing fits inside end post. Companion to 424 (see Brass Brackets page 16).	BH-423	1 3/4" (45mm)	3 1/4" (83mm)	BT-423	2 1/4" (57mm)	4 3/8" (112mm)
423A Rounded End Post Companion to 424A (see Brass Brackets page 16).	BH-423A	3 3/8" (92mm)	2 15/16" (75mm)	BT-423A	4 3/8" (111mm)	3 3/8" (83mm)
437 Ball Finial Finial end fits inside tubing.	BH-437	3 1/2" (89mm)	2 1/4" (57mm)	BT-437	4 1/2" (114mm)	3" (76mm)

BRASS FLANGES

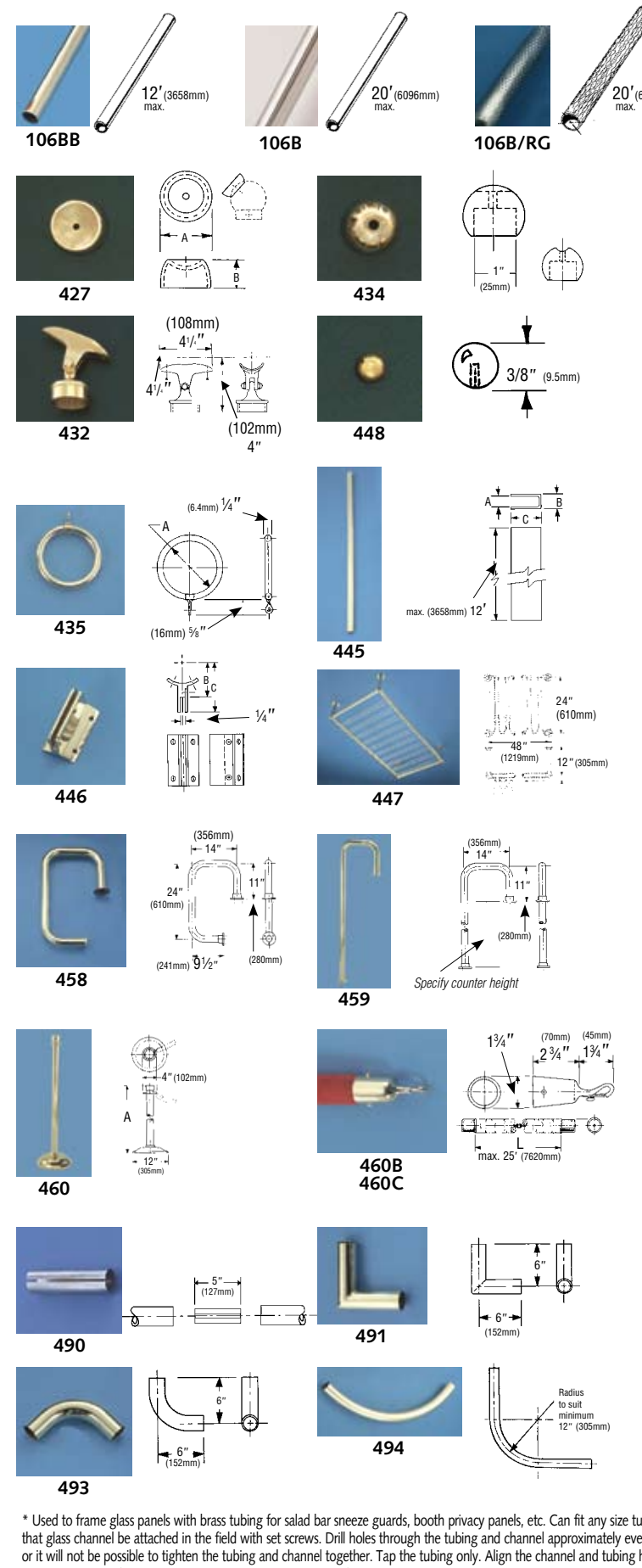
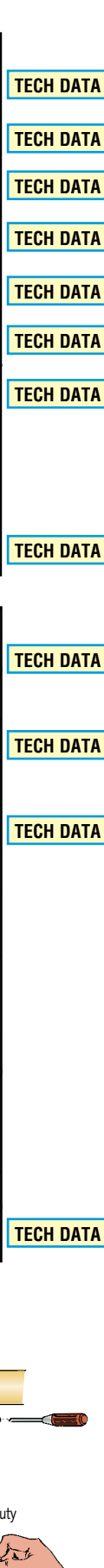
	1 1/2" O.D.	A	B	2" O.D.	A	B
428 Wall Flange Tubing fits inside flange. To secure connection, apply adhesive to inside flange sleeve and insert tubing.	BH-428	1 1/8" (29mm)	3" (76mm)	BT-428	1 1/4" (32mm)	4" (102mm)
428A Adjustable Angle Flange Tubing slips over mounting insert. To secure connection, apply adhesive to inside of tubing end and slip over insert.	BH-428A	3" (76mm)	2 1/4" (57mm)	BT-428A	4 1/8" (128mm)	3" (76mm)
429 Floor Flange Tubing fits inside flange. To secure connection, apply adhesive to inside flange sleeve and insert tubing.	BH-429	4" (102mm)	1 1/8" (29mm)	BT-429	5" (127mm)	1 1/2" (38mm)
429C Floor Cover Plate Decorative flange. See page 6 for more information.	BH-429C	4" (102mm)		BT-429C	4 15/16" (125mm)	
429IF Iron Flange Reinforcing post provides extra stability inside brass tubing. Use in conjunction with 429C. See page 6 for more information.	BH-429IF	3 3/4" (95mm)		BT-429IF	4 1/2" (114mm)	
429S Socket & Cap for Uncarpeted Floor Allows removal of rail from concrete floor. Requires concrete floor. Drill out a 3" (76mm) area and fill in the concrete around it. Lugs welded onto brass vertical prevent the entire socket from coming out of the concrete after it's set.	N/A			BT-429S	3" (76mm)	4 1/2" (114mm)
429SC Socket & Cap for Carpeted Floor Same as 429S.	N/A			BT-429SC	3" (76mm)	4 1/2" (114mm)
430 Heavy Duty Floor Flange Same as 429.	BH-430	5 1/4" (133mm)	1" (25mm)	BT-430	7" (178mm)	1 1/2" (38mm)

INSTALLATION

In-wall backing is required. TSM recommends supports every 48" for upright rails and every 36" for footrails (1219 and 914mm). It is important to comply with local codes in mounting railings, for the national codes vary widely in their recommendations [from 30"-38" (762-973mm)] above floor level. Align brackets with tubing, then use flanges as a template to pinpoint mounting hole placement. Pre-drill pilot holes and lubricate screws provided by TSM with soap. Attach tubing to brackets using set screws or adhesive provided by TSM. While TSM provides 1 1/2" brass wood screws with Series 400 components, it is the installer's responsibility to select fasteners that are appropriate for the wall condition and application. Mounting holes in flanges are countersunk.

For set screw connections: Drill through component and tubing with bit and thread tubing or component (whichever is closest) with tap.

For adhesive connections: Apply bead inside female component openings and insert dowels to form a hairline joint. Adhesive can be used in conjunction with set screws for extra strength. The natural beauty of the brass finish is maintained by regular, frequent cleaning and polishing.



BRASS & STAINLESS STEEL TUBING

	1 1/2" O.D.	2" O.D.
106BB Brass Tubing, Bright Finish 12' (3658mm) maximum length. Can be custom cut.	BH-106BB	BT-106BB
106B Stainless Steel Tubing, Bright Finish 20' (6096mm) maximum length. Can be custom cut. Looks like chrome.	H-106B	T-106B
106B/RG Stainless Steel Tubing, Bright Finish Ripple Grip Non-Slip Finish. Same as 106B.	H-106B/RG	N/A

ANGLE AND TUBING ADAPTERS

	1 1/2" O.D.	2" O.D.
427 Angle Adapter/Collar Used to create proper angle on stair railing. Position adapter at angle required on ball fitting (can be used from 90° to 180°) and attach with machine screws provided by manufacturer. A = 1 3/4" (45mm) for BH & 2-3/16" (56mm) for BT. B = 7/8" (22mm) for BH & 1" (25mm) for BT.	BH-427	BT-427
432 Adjustable Saddle Tubing slips over insert. To secure connection, apply adhesive to inside of tubing and slip over insert.	N/A	BT-432
434 2" to 1" Tubing Adapter Connection adapts 2" O.D. tubing to 1" O.D. perpendicular (51 to 25mm). Position adapter at angle required on 2" (51mm) tubing and attach with machine screw provided by manufacturer. 1" tubing (25mm) fits inside adapter.	N/A	BT-434
448 Diameter Ball Performs same function as a cap nut to cover 3/16" (5mm) exposed threaded rod, but in a decorative manner.	BU-448	BU-448

MISC. ITEMS AND ACCESSORIES

	1 1/2" O.D.	2" O.D.
435 Curtain Ring	BH-435	BT-435
445 Glass Channel *	BU-445	BU-445
446 Glass Clip Same use as 445. Attaches to tubing and removable panel tightens against glass. Accommodates glass 1/4" (6mm) thick. Can be used with or without 445. Secure to tubing using four 1/4" (6mm) x 8/32 pan head brass machine screws provided by TSM. Remove side panel of clip, insert glass and tighten panel to hold glass securely. B = 1-3/8" (35mm) for BH & 1-5/8" for BT. C = 2-3/16" (56mm) for BH & 2-7/16" (62mm) for BT.	BH-446	BT-446
447 Stemware Rack Provides 10 lanes to hold wine glasses.	BH-447	N/A
458 Service Bar Rail Separates area of bar that is not to be used by customers.	BH-458	BT-458
459 Waitress Station Separates area of bar that is not to be used by customers.	BH-459	BT-459
460 Crowd Control Post Useful anywhere queues form. Easy set-up and dismantling allows instant adaptation to fluctuations in crowd size. A = 42 1/2" - 44" (1080-1118mm).	N/A	BT-460
460B Snap Rope End Screws secure ends of rope inside fittings.	BH-460B	N/A
460C Velour Rope Gold, green, blue and brown. Standard length is 7' (2134mm) between posts; shorter lengths can be custom cut (indicate post-to-post dimension only, as TSM will allow for slack.) Rope fits snugly in sleeve of 460B.	BH-460C	N/A
490 Internal Dowel with Adhesive Used to connect component pieces together; one required for every hairline joint. Adhesive sealant supplied.	BH-490	BT-490
491 90° Mitered Corner Elbow	BH-491	BT-491
493 90° Mandrel Radius Bend Elbow	BH-493	BT-493
494 Custom Radius Bend Custom angles and radii are available.	BH-494	BT-494

* Used to frame glass panels with brass tubing for salad bar sneeze guards, both privacy panels, etc. Can fit any size tubing and accommodates glass 1/4" (6mm) thick. Can be used with or without 446. TSM recommends that glass channel be attached in the field with set screws. Drill holes through the tubing and channel approximately every 12" (305mm), then tap all tubing holes where the channel is to be attached. Do not tap the channel, or it will not be possible to tighten the tubing and channel together. Tap the tubing only. Align the channel and tubing holes and insert set screws provided by TSM. Do not over-tighten or the threads in the tubing will strip. A second method for attaching glass channel is to instruct the factory to weld the channel to the tubing. This is more costly than set screws and requires precise drawings detailing where the channel is to be attached. TSM welds the channel to the tubing approximately every 12" (305mm) on both sides. A = 1/4" (6mm). B & C = 3/8" (9.5mm).