



Macalloy Compression Struts
Macalloy Architectural Compression Strut
Macalloy Standard Compression Strut



EXPERIENCE

INNOVATION

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Macalloy Architectural and Standard Compression Strut

Since the 1940's Macalloy has been leading the way in the design, manufacture and supply of threaded bar systems, consistently serving its various markets with experience, innovation and quality.

Macalloy Architectural Compression Struts have benefited the Tension Structures market by providing an aesthetical pin-ended compression member that allows for adjustment of the overall length of the member.

To complement the already existing Macalloy Architectural Compression Strut range, Macalloy also offers the Macalloy Standard Compression Strut range.

The Macalloy Standard Compression Strut provides the same compressive capacities as the architectural system, however the formal appearance of this strut, has a shorter taper cone and no locking collar.

Macalloy Compression Struts utilise standard Macalloy 520 fork end fittings and pin sets. These are connected to the CHS (circular hollow sections) by a taper cone and threaded stud. That in turn is welded onto each end of a CHS.

Macalloy Architectural Compression Struts are available in diameters M12 to M100 in carbon or galvanised steel. The product is also supplied in diameters M12 to M30 in stainless steel. For larger stainless diameters please contact Macalloy's technical department to discuss your requirements.

The Standard Compression Strut range is available in diameters M12 to M100 in carbon or galvanised steel.

The Macalloy Compression Strut system has been approved in Germany, by the Deutsches Institut für Bautechnik, under approval number Z-14.4-530. For further information, please contact the Macalloy technical department.

Corrosion Protection

With the exception of stainless steel compression struts, it is normal that a corrosion protection system is applied. The type of protection will be governed by the conditions of exposure, appearance, and cost. Among the common protection systems available are painting and galvanising.

Tolerances and Adjustments

The cutting tolerance for a CHS is +/-3 mm.

Adjustment within each fork is:
M12 to M56 +/- ½ thread diameter
M64 to M100 +/- 25mm

Project Examples

Macalloy Compression Struts have been used on many projects including Wembley Stadium - London, Elm Park - Dublin and Credit Suisse - Singapore.

Design and Specification

1. Select the required CHS diameter from Macalloy's standard sizes in table 1. The diameter selected will be dependent on the required compressive load and the length of the tendon. Macalloy's technical team can provide advice as to which



ITTL Exhibition Areas, Plot 2, Nicosia, Cyprus
Architect – Maratheftis Yiannouris Architects
Contractor – Loizos Iordanous Constructions Ltd
Engineer – Redesco slr

diameter should be selected for a given compressive load and length.

2. Using the same table, check the fork end capacity is greater than the compressive load required. If the capacity is exceeded, then talk to Macalloy's technical team about a special solution.

3. Specify either the Macalloy Architectural Compression Strut or the Standard Compression Strut. In the specification ensure that the thread size, the strut diameter and the pin to pin length are also given.

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Table 1: Diameter and Maximum Compressive Capacity of Fork

Fork Size	Units	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M76	M85	M90	M100
Carbon CHS OD	mm	33.7	42.4	48.3	60.3	76.1	88.9	114.3	139.7	168.3	193.7	219.1	244.5	273.0	323.9
Carbon CHS Wall Thickness	mm	4	5	5	5	5	5	6.3	10	10	10	12.5	16	16	16
Stainless CHS OD	mm	33.4	42.16	48.3	60.33	73.03									
Stainless CHS Wall Thickness	mm	4.5	4.85	5.08	5.08	5.16									
Maximum compressive capacity to EC3	kN	14.0	28.1	44.7	69.3	121.6	189.6	274.0	369.7	530.0	728.7	1063.9	1395.3	1588.6	2031.3
Maximum pin to pin length*	mm	2369	2663	2671	3105	3357	3367	4498	6397	7097	7420	8188	9323	10291	11679
Maximum compressive capacity to BS5950	kN	16.5	33.4	53.3	83.0	147.0	230.9	335.6	454.2	654.2	904.2	1320.9	1739.2	1982.2	2542.0
Maximum pin to pin length*	mm	2304	2593	2625	3061	3345	3411	4490	6253	6984	7335	7838	9185	10138	11498

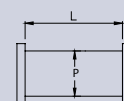
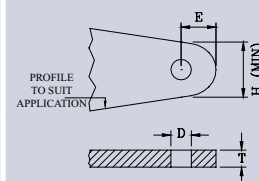
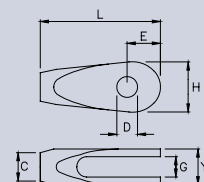
* To attain above loads based on an Architectural horizontal strut. Contact technical department for Standard struts and vertical lengths.

Table 2: Component Dimensions - Macalloy Compression Strut Systems

Thread	Unit	M12	M16	M20	M24	M30	M36	M42	M48	M56	M64	M76	M85	M90	M100
Fork Ref.		FA12	FA16	FA20	FA24	FA30	FA36	FA42	FA48	FA56	FA64	FA76	FA85	FA90	FA100
L	mm	75	99	122	148	178	204	232	266	314	348	410	459	489	555
G (min)	mm	12	15	19	24	26	34	39	44	49	59	76	78	86	91
C Dia.	mm	19	25	29	35	44	52	60	69	80	91	108	121	129	143
D Dia	mm	13	17	21.4	25.5	31.5	37.5	43.5	49.5	57.5	65.5	78.5	91.5	96.5	111.5
E	mm	22	29	34	42	53	61	70	81	97	111	132	153	162	188
Y	mm	22	28	37	44	50	64	75	87	97	115	146	154	169	174
H	mm	34	45	53	64	81	94	109	123	147	169	201	236	248	289
Gusset Plate Ref A*		GPA12	GPA16	GPA20	GPA24	GPA30	GPA36	GPA42	GPA48	GPA56	GPA64	GPA76	GPA85	GPA90	GPA100
T (Thickness)	mm	10	12	15	20	22	30	35	40	45	55	70	70	80	85
D	mm	13	17	21.5	25.5	31.5	37.5	43.5	49.5	57.5	65.5	78.5	91.5	96.5	111.5
E	mm	22	30	37	43	56	64	74	84	101	112	132	160	166	196
H (min)	mm	34	48	60	68	90	103	118	135	163	180	211	259	266	317
Gusset Plate Ref B**		GPA12	GPA16	GPA20	GPA24	GPA30									
T (Thickness)	mm	9	12	15	20	22									
D	mm	17	21	25.5	30	36									
E	mm	24	31	37	45	56									
H (min.)	mm	38	49	58	69	89									
Architectural Pin Ref		PA12	PA16	PA20	PA24	PA30	PA36	PA42	PA48	PA56	PA64	PA76	PA85	PA90	PA100
P Dia	mm	12	16	20	24	29	35	41	47	55	63	76	90	93	108
L	mm	24	30	39	46	52	66	78	91	100	120	151	155	175	180

* Grade S355 plate to EN 10088, or equivalent strength. Minimum yield 355 N/mm²

**Grade S355 plate to EN10088, or equivalent strength, for use with isolation sleeves and washers. Minimum yield 355 N/mm²



Macalloy Standard Compression Strut Pin to Pin Length



PIN TO PIN LENGTH

Macalloy Architectural Compression Strut Pin to Pin Length



PIN TO PIN LENGTH

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Macalloy Compression Strut
used in staircase application



88 Wood Street, London, UK
Architect - Richard Rogers Partnership
Contractor – Kajima Laing Management Joint Venture
Engineer - Arups



St Paul's Square, Liverpool, UK
Architect - RHWL Architects
Contractor - Sheperd Construction
Engineer - Buro Happold

This publication provides the technical details currently used by Macalloy in the manufacture of its components.
The company reserves the right to amend technical details as and where necessary in line with its policy of continuous development.

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