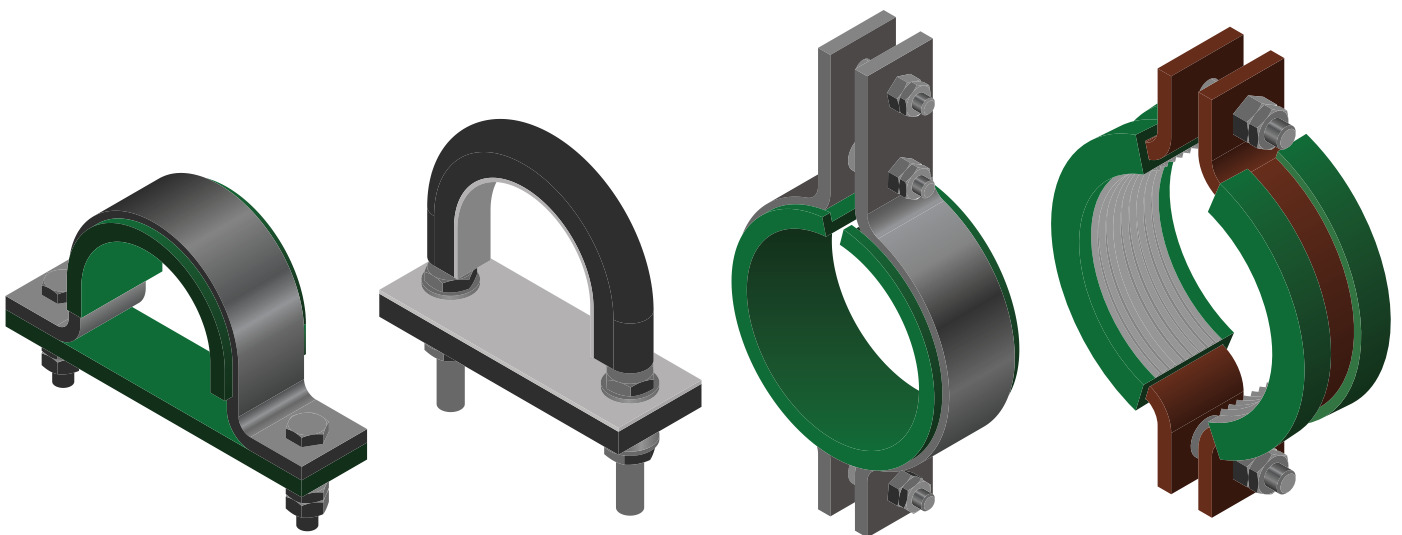




WITCHLINER ISOLATION PRODUCTS

FOR STAINLESS STEEL & CUPRO-NICKEL PIPES



WITCHLINER ISOLATION PRODUCTS

For Stainless steel and Cupro-nickel pipes

INTRODUCTION

As part of its extensive product offering, Carpenter & Paterson (Asia) Ltd ("CPA") manufactures its own range of highly effective 'WITCHLINER' isolation materials. WITCHLINER products suit Stainless Steel, Duplex, Super Duplex and Cupro-Nickel Piping and incorporate the following moulded isolation/encasing materials:

Temperature range

- 70/80 FRN - 30°C to 150°C
- HTFR Silicone - 70°C to 300°C

Both materials offer extensive performance qualities, and can be utilised in a wide range of pipework installations.

PRINCIPAL BENEFITS

- Clamping damage restraint to thin wall pipes
- Prevention of electrolytic erosion between dissimilar metals
- Curtailment of noise and vibration
- Cost effective and time saving
- Large standard ranges available
- Other special designs and models available to suit customer requirements

PROPERTIES & ISOLATING MATERIAL

The steel part of both the U-Bolts and Clamps are isolated from the pipe utilising either extruded 70/80 FRN (conforming to 854255) or HTFRS rubber elastomer.

70/80 FRN

70/80 FRN is one of the most commonly used synthetic rubbers. This material is strong, resilient, and achieves an extremely high performance in the reduction of noise and vibration in pipework. 70/80 FRN also has an outstanding resistance to a wide range of chemicals, including acids, alkalis, fats, oils, greases and solvents. It has advantageous physical properties including tear and abrasion resistance, ozone and weathering.

Colour: Green

Working Temp Range: -30°C to 150°C

Typical properties for 70/80 FRN:

Properties of 70/80 FRN		
Hardness Shore	A	80
Density	kg/m ³	1320
Tensile Strength	MPa	7.5
Elongation	%	575
Min Service Temp	°C	-30
Max Service Temp	°C	150

HTFR SILICONE RUBBER ELASTOMER

Silicone rubber is a chemically inert synthetic elastomer which differs from other synthetic and natural rubbers in that it is able to maintain excellent elasticity and resilience over a wide temperature range. It has excellent resistance to fire, very low toxicity, and can perform at temperatures up to 300°C (max) with minimum loss of characteristics.

The material has excellent resistance to ozone, weathering, and a wide range of chemicals, solvents, oils and greases.

Colour: Mid-Grey

Working Temp Range: -70°C to 300°C

Typical properties for HTFR Silicone Rubber Elastomer:

Properties of HTFRS		
Hardness Shore	A	65
Density	kg/m ³	1390
Tensile Strength	MPa	7.2
Elongation	%	190
Min Service Temp	°C	-70
Max Service Temp	°C	300

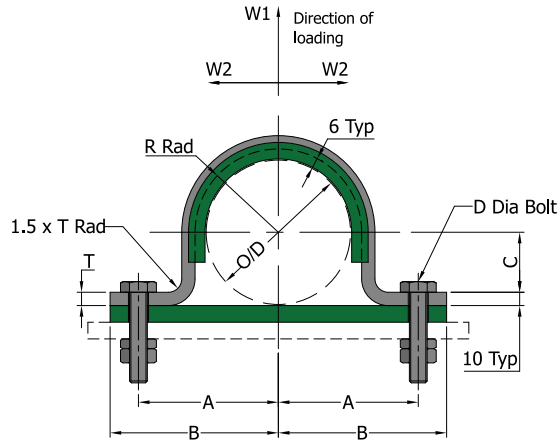
SURFACE FINISH (METALLIC COMPONENTS)

As a standard finish, saddles, u-bolts, clamps and u-straps are hot dip galvanised in accordance with ASTM A123.

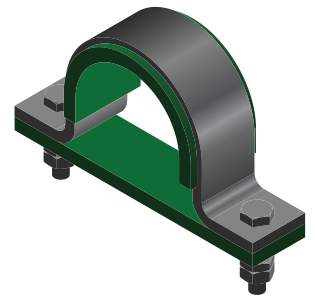
All such components are also available in stainless steel.

Xylan coating is available upon request.

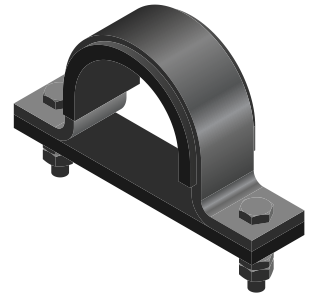
WITCHLINER INSULATED PIPE SADDLE



70/80 FRN



HT/FRS



Material: Saddle – carbon steel or stainless steel
Witchliner – 70/80 FRN or HT/FRS
Surface finish: Saddle, nuts & bolts – hot dip galvanised
(carbon steel) in accordance with ASTM A123.
Order by: Part number and saddle material

Larger sizes, alternative materials and other surface coatings are available on request.

Fig. 600 - For Stainless Steel Pipes

Part Number		Pipe NB	Pipe O/D	WxT	A	B	C	Dia. D	R	Max Load (kg)	
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	W1	W2
600-021-FRN	600-021-HTFRS	15	21.3	35x5	53	68	10	M10	16.5	170	270
600-027-FRN	600-027-HTFRS	20	26.9	35x5	55	70	13	M10	19.5		210
600-034-FRN	600-034-HTFRS	25	33.7	35x5	57	72	16	M10	23		175
600-043-FRN	600-043-HTFRS	32	42.4	35x8	64	82	20	M12	27	315	285
600-049-FRN	600-049-HTFRS	40	48.3	35x8	79	97	23	M12	30		250
600-061-FRN	600-061-HTFRS	50	60.3	35x8	81	99	29	M12	36		200
600-073-FRN	600-073-HTFRS	65	73.0	50x10	89	113	35	M16	42.5	465	330
600-089-FRN	600-089-HTFRS	80	88.9	50x10	99	123	43	M16	50.5		280
600-115-FRN	600-115-HTFRS	100	114.3	50x10	108	132	55	M16	63		220
600-168-FRN	600-168-HTFRS	150	168.3	60x15	160	190	82	M20	90	990	410
600-219-FRN	600-219-HTFRS	200	219.1	60x15	185	215	107	M20	115.5		315
600-273-FRN	600-273-HTFRS	250	273.0	60x15	215	245	135	M20	142.5	2060	280
600-324-FRN	600-324-HTFRS	300	323.9	60x15	240	270	160	M20	168		

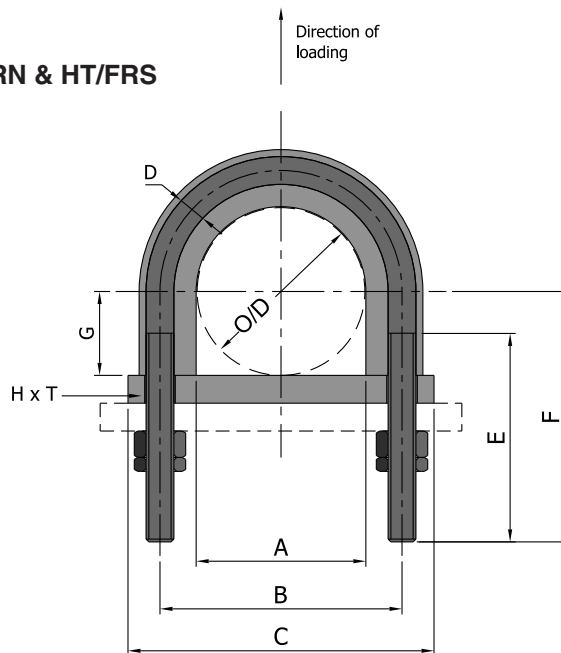
Fig. 600A - For Cupro-Nickel Pipes

Part Number		Pipe Size O/D	WxT	A	B	C	Dia. D	R	Max Load (kg)	
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	W1	W2
600A-016-FRN	600A-016-HTFRS	16	35x5	53	68	8	M10	14	170	270
600A-020-FRN	600A-020-HTFRS	20	35x5	53	68	10	M10	16		
600A-025-FRN	600A-025-HTFRS	25	35x5	55	70	12.5	M10	18.5		
600A-030-FRN	600A-030-HTFRS	30	35x5	57	72	15	M10	21	315	210
600A-038-FRN	600A-038-HTFRS	38	35x8	64	82	19	M12	25		
600A-045-FRN	600A-045-HTFRS	44.5	35x8	79	97	22	M12	28		
600A-057-FRN	600A-057-HTFRS	57	35x8	81	99	28.5	M12	34.5	465	285
600A-076-FRN	600A-076-HTFRS	76.1	50x10	89	113	38	M16	44		
600A-089-FRN	600A-089-HTFRS	88.9	50x10	99	123	44.5	M16	50.5		
600A-108-FRN	600A-108-HTFRS	108	50x10	108	132	54	M16	60	990	220
600A-133-FRN	600A-133-HTFRS	133	60x15	136	166	66	M20	72.5		
600A-159-FRN	600A-159-HTFRS	159	60x15	155	185	79.5	M20	85.5		
600A-193-FRN	600A-193-HTFRS	193.7	60x15	175	205	97	M20	103	2060	410
600A-219-FRN	600A-219-HTFRS	219.1	60x15	185	215	109.5	M20	115.5		
600A-267-FRN	600A-267-HTFRS	267	60x15	215	245	133.5	M20	139.5		
600A-324-FRN	600A-324-HTFRS	323.9	60x15	240	270	162	M20	168	2060	280

WITCHLINER INSULATED U-BOLT (TO GRIP)



70/80 FRN & HT/FRS



Material: U-bolt – carbon steel or stainless steel
Witchliner – 70/80 FRN or HT/FRS

Surface finish: U-bolts & nuts – hot dip galvanised
(carbon steel) in accordance with ASTM A123.

Order by: Part number and U-bolt material

Larger sizes, alternative materials and other surface coatings are available on request.

Fig. 601 - For Stainless Steel Pipes

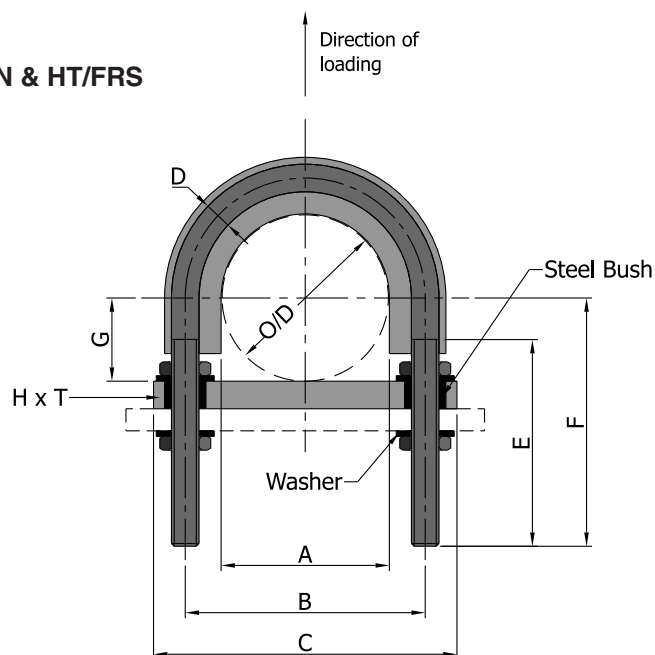
Part Number		Pipe NB	Pipe O/D	A	B	C	Dia. D	E	F	G	HxT	Max Load
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
601-021-FRN	601-021-HTFRS	15	21.3	21	37	60	M6	60	60	10.5	25x10	220
601-027-FRN	601-027-HTFRS	20	26.9	27	43	70	M6	60	65	13.5	25x10	
601-034-FRN	601-034-HTFRS	25	33.7	34	50	75	M6	60	65	17	25x10	
601-043-FRN	601-043-HTFRS	32	42.4	43	69	95	M10	70	80	21.5	25x10	545
601-049-FRN	601-049-HTFRS	40	48.3	49	75	100	M10	70	80	24.5	25x10	
601-061-FRN	601-061-HTFRS	50	60.3	61	87	110	M10	75	90	30.5	25x10	
601-073-FRN	601-073-HTFRS	65	73.0	73	99	130	M12	75	95	36.5	30x10	1000
601-089-FRN	601-089-HTFRS	80	88.9	89	115	140	M12	75	100	44.5	30x10	
601-115-FRN	601-115-HTFRS	100	114.3	115	141	170	M12	75	110	57.5	30x10	
601-168-FRN	601-168-HTFRS	150	168.3	168	210	250	M16	120	180	84	50x10	1635
601-219-FRN	601-219-HTFRS	200	219.1	219	262	315	M16	120	200	109.5	50x10	
601-273-FRN	601-273-HTFRS	250	273.0	273	324	375	M20	120	235	136.5	50x10	3405
601-324-FRN	601-324-HTFRS	300	323.9	324	375	425	M20	120	265	162	50x10	
601-356-FRN	601-356-HTFRS	350	355.6	356	407	460	M20	120	280	178	50x10	
601-407-FRN	601-407-HTFRS	400	406.4	407	458	510	M20	120	305	203.5	50x10	

Fig. 601A - For Cupro-Nickel Pipes

Part Number		Pipe Size O/D	A	B	C	Dia. D	E	F	G	HxT	Max Load
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
601A-016-FRN	601A-016-HTFRS	16	16	32	60	M6	60	60	8	25x10	220
601A-020-FRN	601A-020-HTFRS	20	20	36	70	N6	65	65	10	25x10	
601A-025-FRN	601A-025-HTFRS	25	25	41	75	M6	60	65	12.5	25x10	
601A-030-FRN	601A-030-HTFRS	30	30	46	85	M6	65	75	15	25x10	
601A-038-FRN	601A-038-HTFRS	38	38	64	95	M10	70	80	19	25x10	545
601A-045-FRN	601A-045-HTFRS	44.5	45	71	100	M10	70	80	22.5	25x10	
601A-057-FRN	601A-057-HTFRS	57	57	83	110	M10	75	90	28.5	25x10	
601A-076-FRN	601A-076-HTFRS	76.1	76	102	135	M12	75	95	38	30x10	1000
601A-089-FRN	601A-089-HTFRS	88.9	89	115	140	M12	75	100	44.5	30x10	
601A-108-FRN	601A-108-HTFRS	108	108	134	170	M12	75	110	54	30x10	
601A-159-FRN	601A-159-HTFRS	159	159	201	250	M16	120	180	79.5	50x10	1635
601A-219-FRN	601A-219-HTFRS	219.1	219	262	315	M16	120	200	109.5	50x10	
601A-267-FRN	601A-267-HTFRS	267	267	318	370	M20	120	235	133.5	50x10	3405
601A-324-FRN	601A-324-HTFRS	323.9	324	375	425	M20	120	265	162	50x10	

WITCHLINER INSULATED U-BOLT (NOT TO GRIP)

70/80 FRN & HT/FRS



Material: U-bolt – carbon steel or stainless steel
Witchliner – 70/80 FRN or HT/FRS

Surface finish: U-bolts & nuts – hot dip galvanised
(carbon steel) in accordance with ASTM A123.

Order by: Part number and U-bolt material

Larger sizes, alternative materials and other surface coatings are available on request.

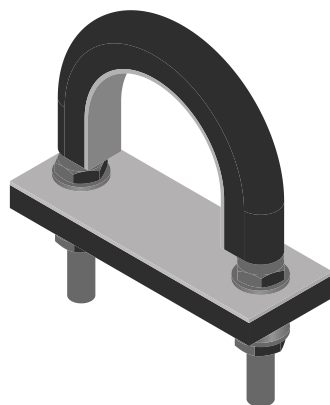
Fig. 602 - For Stainless Steel Pipes

Part Number		Pipe NB	Pipe O/D	A	B	C	Dia. D	E	F	G	HxT	Max Load
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
602-021-FRN	602-021-HTFRS	15	21.3	23	37	60	M6	60	60	11.5	25x10	220
602-027-FRN	602-027-HTFRS	20	26.9	29	43	70	M6	60	65	14.5	25x10	
602-034-FRN	602-034-HTFRS	25	33.7	36	50	75	M6	60	65	18	25x10	
602-043-FRN	602-043-HTFRS	32	42.4	45	69	95	M10	70	80	22.5	25x10	545
602-049-FRN	602-049-HTFRS	40	48.3	52	75	100	M10	70	80	26	25x10	
602-061-FRN	602-061-HTFRS	50	60.3	64	87	110	M10	75	90	32	25x10	
602-073-FRN	602-073-HTFRS	65	73.0	76	99	130	M12	75	95	38	30x10	1000
602-089-FRN	602-089-HTFRS	80	88.9	92	115	140	M12	75	100	46	30x10	
602-115-FRN	602-115-HTFRS	100	114.3	118	141	170	M12	75	110	59	30x10	
602-168-FRN	602-168-HTFRS	150	168.3	172	210	250	M16	120	180	86	50x10	1635
602-219-FRN	602-219-HTFRS	200	219.1	224	262	315	M16	120	200	112	50x10	
602-273-FRN	602-273-HTFRS	250	273.0	278	324	375	M20	130	235	139	50x10	
602-324-FRN	602-324-HTFRS	300	323.9	329	375	425	M20	130	265	164.5	50x10	3405
602-356-FRN	602-356-HTFRS	350	355.6	362	407	460	M20	160	280	181	50x10	
602-406-FRN	602-406-HTFRS	400	406.4	413	458	510	M20	160	305	206.5	50x10	

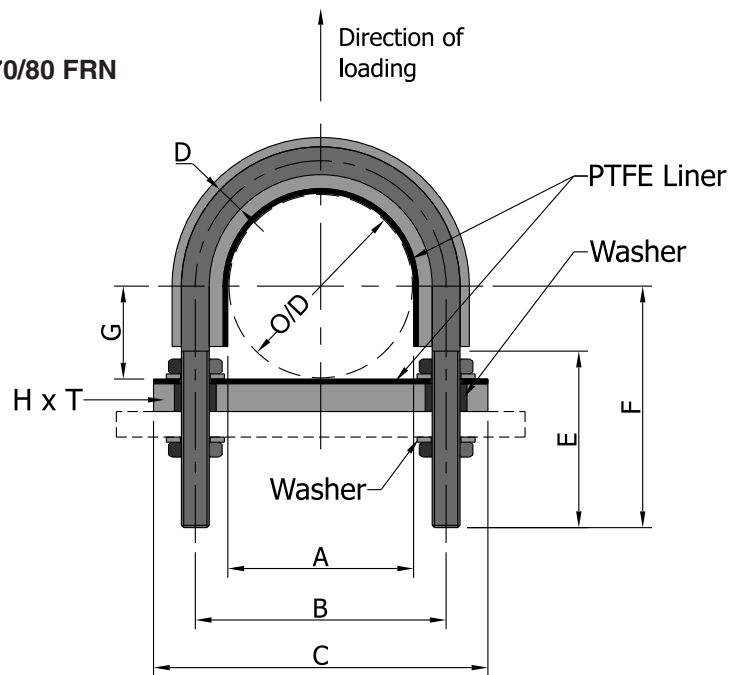
Fig. 602A - For Cupro-Nickel Pipes

Part Number		Pipe Size O/D	A	B	C	Dia. D	E	F	G	HxT	Max Load
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
602A-016-FRN	602A-016-HTFRS	16	18	32	60	M6	60	60	9	25x10	220
602A-020-FRN	602A-020-HTFRS	20	23	36	70	N6	65	65	11.5	25x10	
602A-025-FRN	602A-025-HTFRS	25	28	41	75	M6	60	65	14	25x10	
602A-030-FRN	602A-030-HTFRS	30	33	46	85	M6	65	75	16.5	25x10	
602A-038-FRN	602A-038-HTFRS	38	41	64	95	M10	70	80	20.5	25x10	545
602A-045-FRN	602A-045-HTFRS	44.5	48	71	100	M10	70	80	24	25x10	
602A-057-FRN	602A-057-HTFRS	57	60	83	110	M10	75	90	30	25x10	
602A-076-FRN	602A-076-HTFRS	76.1	79	102	135	M12	75	95	39.5	30x10	1000
602A-089-FRN	602A-089-HTFRS	88.9	92	115	140	M12	75	100	46	30x10	
602A-108-FRN	602A-108-HTFRS	108	112	134	170	M12	75	110	56	30x10	
602A-159-FRN	602A-159-HTFRS	159	163	201	250	M16	120	180	81.5	50x10	1635
602A-219-FRN	602A-219-HTFRS	219.1	224	262	315	M16	120	200	112	50x10	
602A-267-FRN	602A-267-HTFRS	267	272	318	370	M20	130	235	136	50x10	
602A-324-FRN	602A-324-HTFRS	323.9	329	375	425	M20	130	265	164.5	50x10	3405

WITCHLINER INSULATED U-BOLT WITH PTFE (NOT TO GRIP)



70/80 FRN



Material: U-bolt – carbon steel or stainless steel
Witchliner – 70/80 FRN
Surface finish: U-bolts & nuts – hot dip galvanised
(carbon steel) in accordance with ASTM A123.
Order by: Part number and U-bolt material

Larger sizes, alternative materials and other surface coatings are available on request.

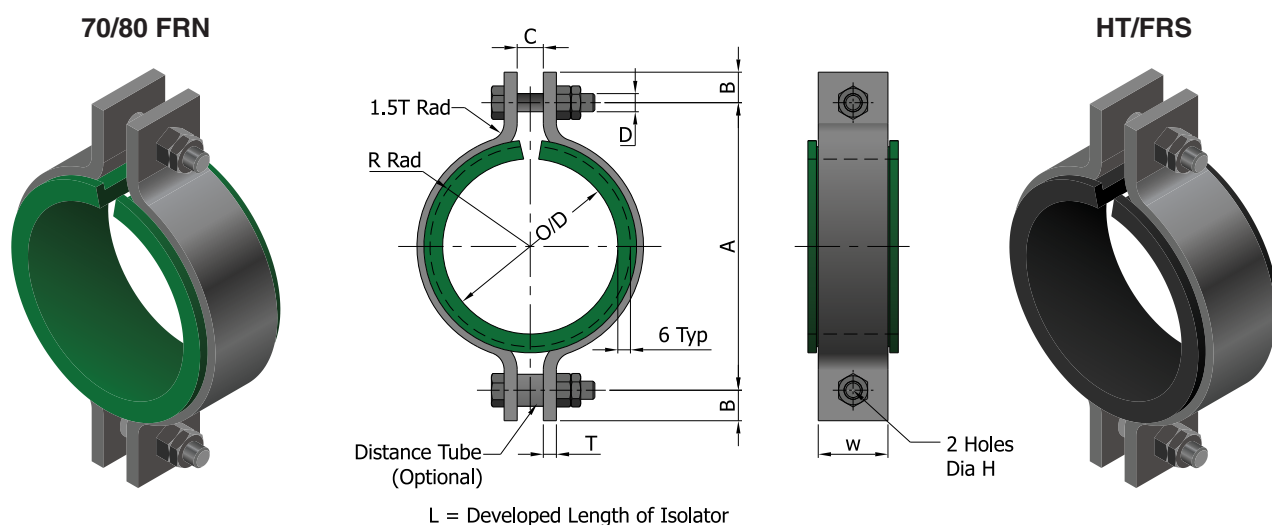
Fig. 603 - For Stainless Steel Pipes

Part Number 70/80 FRN	Pipe NB	Pipe O/D	A	B	C	Dia. D	E	F	G	HxT	Max Load
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
603-021-FRN	15	21.3	21	37	60	M6	60	60	10.5	25x10	220
603-027-FRN	20	26.9	27	43	70	M6	60	65	13.5	25x10	
603-034-FRN	25	33.7	34	50	75	M6	60	65	17	25x10	
603-043-FRN	32	42.4	43	69	95	M10	70	80	21.5	25x10	545
603-049-FRN	40	48.3	49	75	100	M10	70	80	24.5	25x10	
603-061-FRN	50	60.3	61	87	110	M10	75	90	30.5	25x10	
603-073-FRN	65	73.0	73	99	130	M12	75	95	36.5	30x10	1000
603-089-FRN	80	88.9	89	115	140	M12	75	100	44.5	30x10	
603-115-FRN	100	114.3	115	141	170	M12	75	110	57.5	30x10	
603-168-FRN	150	168.3	168	210	250	M16	120	180	84	50x10	1635
603-219-FRN	200	219.1	219	262	315	M16	120	200	109.5	50x10	
603-273-FRN	250	273.0	273	324	375	M20	120	235	136.5	50x10	
603-324-FRN	300	323.9	324	375	425	M20	120	265	162	50x10	3405
603-356-FRN	350	355.6	356	407	460	M20	120	280	178	50x10	
603-407-FRN	400	406.4	407	458	510	M20	120	305	203.5	50x10	

Fig. 603A - For Cupro-Nickel Pipes

Part Number 70/80 FRN	Pipe Size O/D	A	B	C	Dia. D	E	F	G	HxT	Max Load
	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
603A-016-FRN	16	16	32	60	M6	60	60	8	25x10	220
603A-020-FRN	20	20	36	70	N6	65	65	10	25x10	
603A-025-FRN	25	25	41	75	M6	60	65	12.5	25x10	
603A-030-FRN	30	30	46	85	M6	65	75	15	25x10	545
603A-038-FRN	38	38	64	95	M10	70	80	19	25x10	
603A-045-FRN	44.5	45	71	100	M10	70	80	22.5	25x10	
603A-057-FRN	57	57	83	110	M10	75	90	28.5	25x10	1000
603A-076-FRN	76.1	76	102	135	M12	75	95	38	30x10	
603A-089-FRN	88.9	89	115	140	M12	75	100	44.5	30x10	
603A-108-FRN	108	108	134	170	M12	75	110	54	30x10	1635
603A-159-FRN	159	159	201	250	M16	120	180	79.5	50x10	
603A-219-FRN	219.1	219	262	315	M16	120	200	109.5	50x10	
603A-267-FRN	267	267	318	370	M20	120	235	133.5	50x10	3405
603A-324-FRN	323.9	324	375	425	M20	120	265	162	50x10	

WITCHLINER INSULATED 2 BOLT PIPE CLAMP



Material: Clamp – carbon steel or stainless steel. Distance tube – BS1387 Medium
Witchliner – 70/80 FRN or HT/FRS

Surface finish: Clamp, tube, nuts & bolts – hot dip galvanised
(carbon steel) in accordance with ASTM A123.

Order by: Part number and clamp material

Larger sizes, alternative materials and other surface coatings are available on request.

Fig. 604 - For Stainless Steel Pipes

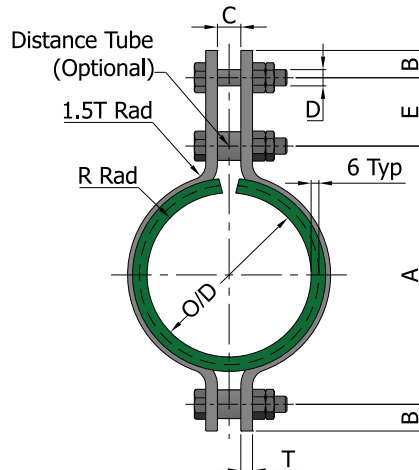
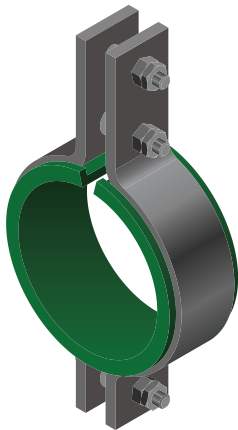
Part Number		Pipe NB	Pipe O/D	R	WxT	A	B Min.	C	L	Dia. D	Dist. Tube	Dia H	Max Load
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
604-021-FRN	604-021-HTFRS	15	21.3	16.5	35x5	100	15	10	81	M10x40	10 NB	12	280
604-027-FRN	604-027-HTFRS	20	26.9	19.5	35x5	105	15	10	98	M10x40	10 NB	12	280
604-034-FRN	604-034-HTFRS	25	33.7	23	35x5	110	15	10	120	M10x40	10 NB	12	280
604-043-FRN	604-043-HTFRS	32	42.4	27	35x5	120	18	12	147	M12x45	15 NB	15	280
604-049-FRN	604-049-HTFRS	40	48.3	30	35x5	125	18	12	166	M12x45	15 NB	15	280
604-061-FRN	604-061-HTFRS	50	60.3	36	35x5	140	18	12	203	M12x45	15 NB	15	280
604-073-FRN	604-073-HTFRS	65	73.0	42.5	35x5	155	18	12	243	M12x45	15 NB	15	280
604-089-FRN	604-089-HTFRS	80	88.9	50.5	35x5	170	18	12	293	M12x45	15 NB	15	280
604-115-FRN	604-115-HTFRS	100	114.3	63	35x5	195	18	12	373	M12x45	15 NB	15	280
604-168-FRN	604-168-HTFRS	150	168.3	90	35x8	255	24	16	543	M16x55	20 NB	19	450
604-219-FRN	604-219-HTFRS	200	219.1	115.5	35x8	325	24	16	702	M16x50	20 NB	19	450
604-273-FRN	604-273-HTFRS	250	273.0	142.5	35x8	380	24	16	871	M16x50	20 NB	19	450
604-324-FRN	604-324-HTFRS	300	323.9	168	50x10	450	30	20	1031	M20x75	20 NB	24	900

Fig. 604A - For Cupro-Nickel Pipes

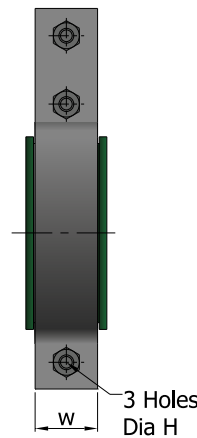
Part Number		Pipe Size O/D	R	WxT	A	B Min.	C	L	Dia. D	Dist. Tube	Dia H	Max Load
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
604A-016-FRN	604A-016-HTFRS	16	14	35x5	95	15	10	64	M10x40	10 NB	12	280
604A-020-FRN	604A-020-HTFRS	20	16	35x5	95	15	10	77	M10x40	10 NB	12	280
604A-025-FRN	604A-025-HTFRS	25	18.5	35x5	100	15	10	92	M10x40	10 NB	12	280
604A-030-FRN	604A-030-HTFRS	30	21	35x5	105	15	10	108	M10x40	10 NB	12	280
604A-038-FRN	604A-038-HTFRS	38	25	35x5	120	18	12	133	M12x45	15 NB	15	280
604A-045-FRN	604A-045-HTFRS	44.5	28	35x5	120	18	12	154	M12x45	15 NB	15	280
604A-057-FRN	604A-057-HTFRS	57	34.5	35x5	140	18	12	193	M12x45	15 NB	15	280
604A-076-FRN	604A-076-HTFRS	76.1	44	35x5	155	18	12	253	M12x45	15 NB	15	280
604A-089-FRN	604A-089-HTFRS	88.9	50.5	35x5	170	18	12	293	M12x45	15 NB	15	280
604A-108-FRN	604A-108-HTFRS	108	60	35x5	190	18	12	353	M12x45	15 NB	15	280
604A-159-FRN	604A-159-HTFRS	159	86	35x8	240	24	16	513	M16x55	20 NB	19	450
604A-219-FRN	604A-219-HTFRS	219.1	118	35x8	325	24	16	702	M16x50	20 NB	19	450
604A-267-FRN	604A-267-HTFRS	267	140	35x8	375	24	16	853	M16x50	20 NB	19	450
604A-324-FRN	604A-324-HTFRS	323.9	168	50x10	450	30	20	1031	M20x75	20 NB	24	900

WITCHLINER INSULATED 3 BOLT PIPE CLAMP

70/80 FRN



HT/FRS



L = Developed Length of Isolator

Material: Clamp – carbon steel or stainless steel
Distance tube – BS1387 Medium
Witchliner – 70/80 FRN or HT/FRS

Surface finish: Clamp, tube, nuts & bolts – hot dip galvanised
(carbon steel) in accordance with ASTM A123.

Order by: Part number and clamp material

Larger sizes, alternative materials and other surface coatings are available on request.

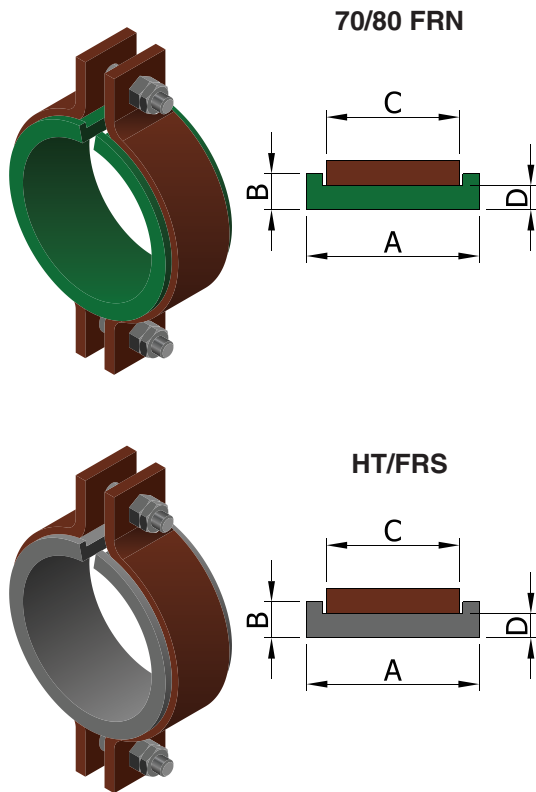
Fig. 605 - For Stainless Steel Pipes

Part Number		Pipe NB	Pipe O/D	R	WxT	A	B Min.	C	L	Dia. D	E	Dist. Tube	Dia H	Max Load
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
605-021-FRN	605-021-HTFRS	15	21.3	16.5	35x5	100	15	13	81	M10x45	70	10 NB	12	280
605-027-FRN	605-027-HTFRS	20	26.9	19.5	35x5	105	15	13	98	M10x45	70	10 NB	12	280
605-034-FRN	605-034-HTFRS	25	33.7	23	35x5	110	15	13	120	M10x45	70	10 NB	12	280
605-043-FRN	605-043-HTFRS	32	42.4	27	35x5	120	18	15	147	M12x50	70	15 NB	15	280
605-049-FRN	605-049-HTFRS	40	48.3	30	35x5	125	18	15	166	M12x50	85	15 NB	15	280
605-061-FRN	605-061-HTFRS	50	60.3	36	35x5	140	18	15	203	M12x50	80	15 NB	15	280
605-073-FRN	605-073-HTFRS	65	73.0	42.5	35x5	155	18	15	243	M12x50	105	15 NB	15	280
605-089-FRN	605-089-HTFRS	80	88.9	50.5	35x5	170	18	15	293	M12x50	105	15 NB	15	280
605-115-FRN	605-115-HTFRS	100	114.3	63	35x5	195	18	15	373	M12x50	105	15 NB	15	280
605-168-FRN	605-168-HTFRS	150	168.3	90	35x8	255	24	19	543	M16x70	95	20 NB	19	450
605-219-FRN	605-219-HTFRS	200	219.1	115.5	35x8	325	24	19	702	M16x70	100	20 NB	19	450
605-273-FRN	605-273-HTFRS	250	273.0	142.5	50x10	380	24	19	871	M16x70	105	20 NB	19	450
605-324-FRN	605-324-HTFRS	300	323.9	168	60x15	450	30	23	1031	M20x90	115	20 NB	24	900

Fig. 605A - For Cupro-Nickel Pipes

Part Number		Pipe Size O/D	R	WxT	A	B Min.	C	L	Dia. D	E	Dist. Tube	Dia H	Max Load
70/80 FRN	HT/FRS	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
605A-016-FRN	605A-016-HTFRS	16	14	35x5	95	15	13	64	M10x45	70	10 NB	12	280
605A-020-FRN	605A-020-HTFRS	20	16	35x5	95	15	13	77	M10x45	70	10 NB	12	280
605A-025-FRN	605A-025-HTFRS	25	18.5	35x5	100	15	13	92	M10x45	70	10 NB	12	280
605A-030-FRN	605A-030-HTFRS	30	21	35x5	105	15	13	108	M10x45	70	10 NB	12	280
605A-038-FRN	605A-038-HTFRS	38	25	35x5	120	18	15	133	M12x50	70	15 NB	15	280
605A-045-FRN	605A-045-HTFRS	44.5	28	35x5	120	18	15	154	M12x50	85	15 NB	15	280
605A-057-FRN	605A-057-HTFRS	57	34.5	35x5	140	18	15	193	M12x50	80	15 NB	15	280
605A-076-FRN	605A-076-HTFRS	76.1	44	35x5	155	18	15	253	M12x50	105	15 NB	15	280
605A-089-FRN	605A-089-HTFRS	88.9	50.5	35x5	170	18	15	293	M12x50	105	15 NB	15	280
605A-108-FRN	605A-108-HTFRS	108	60	35x5	190	18	15	353	M12x50	105	15 NB	15	280
605A-159-FRN	605A-159-HTFRS	159	86	35x8	240	24	19	513	M16x70	95	20 NB	19	450
605A-219-FRN	605A-219-HTFRS	219.1	118	35x8	325	24	19	702	M16x70	100	20 NB	19	450
605A-267-FRN	605A-267-HTFRS	267	140	50x10	375	24	19	853	M16x70	105	20 NB	19	450
605A-324-FRN	605A-324-HTFRS	323.9	168	60x15	450	30	23	1031	M20x90	95	20 NB	24	900

WITCHLINER CLAMP STRIP



(Images above are examples of usage. Clamp not supplied).

Material: Witchliner – 70/80 FRN or HT/FRS
Order by: Part number and length
Available: Cut to desired length or any length up to 25m

Fig. 608

Part Number		A	B	C	D
		mm	mm	mm	mm
608-25-FRN	608-25-HTFRS	40	5	25	3
608-35-FRN	608-35-HTFRS	50	5	35	3
608-40-FRN	608-40-HTFRS	55	5	40	3
608-45-FRN	608-45-HTFRS	60	5	45	3
608-55-FRN	608-55-HTFRS	70	5	55	3
608-60-FRN	608-60-HTFRS	80	5	60	3
608-65-FRN	608-65-HTFRS	85	5	65	3
608-70-FRN	608-70-HTFRS	90	5	70	3
608-75-FRN	608-75-HTFRS	95	5	75	3
608-85-FRN	608-85-HTFRS	105	6	85	3
608-95-FRN	608-95-HTFRS	115	6	95	3
608-105-FRN	608-105-HTFRS	125	6	105	3
608-125-FRN	608-125-HTFRS	145	6	125	3
608-135-FRN	608-135-HTFRS	155	6	135	3
608-145-FRN	608-145-HTFRS	165	6	145	3

Fig. 606

Part Number		A	B	C	D
		mm	mm	mm	mm
606-25-FRN	606-25-HTFRS	45	7.5	25	5
606-35-FRN	606-35-HTFRS	57	8.5	35	6
606-45-FRN	606-45-HTFRS	67	8.5	45	6
606-55-FRN	606-55-HTFRS	77	8.5	55	6
606-65-FRN	606-65-HTFRS	85	8.5	65	6
606-85-FRN	606-85-HTFRS	105	14.5	85	9.5
606-105-FRN	606-105-HTFRS	125	14.5	105	9.5
606-125-FRN	606-125-HTFRS	145	14.5	125	9.5
606-145-FRN	606-145-HTFRS	165	17.5	150	12.5

WITCHLINER LINED CLAMP STRIP

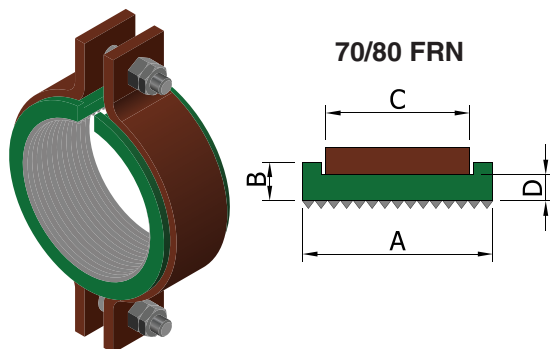


Fig. 610

Part Number	A	B	C	D
	mm	mm	mm	mm
610-25-FRN	45	7.5	25	5
610-35-FRN	57	8.5	35	6
610-45-FRN	67	8.5	45	6
610-55-FRN	77	8.5	55	6
610-65-FRN	85	8.5	65	6
610-85-FRN	105	14.5	85	9.5
610-105-FRN	125	14.5	105	9.5
610-125-FRN	145	14.5	125	9.5
610-145-FRN	165	17.5	150	12.5

(Image left is an example of usage. Clamp not supplied).

Material: Witchliner – 70/80 FRN
Order by: Part number and length
Available: Cut to desired length or any length up to 25m

Fig. 609

Part Number	A	B	C	D
	mm	mm	mm	mm
609-25-FRN	40	5	25	3
609-35-FRN	50	5	35	3
609-40-FRN	55	5	40	3
609-45-FRN	60	5	45	3
609-55-FRN	70	5	55	3
609-60-FRN	80	5	60	3
609-65-FRN	85	5	65	3
609-70-FRN	90	5	70	3
609-75-FRN	95	5	75	3
609-85-FRN	105	6	85	3
609-95-FRN	115	6	95	3
609-105-FRN	125	6	105	3
609-125-FRN	145	6	125	3
609-135-FRN	155	6	135	3
609-145-FRN	165	6	145	3

WITCHLINER WRAP-AROUND CLAMP STRIP

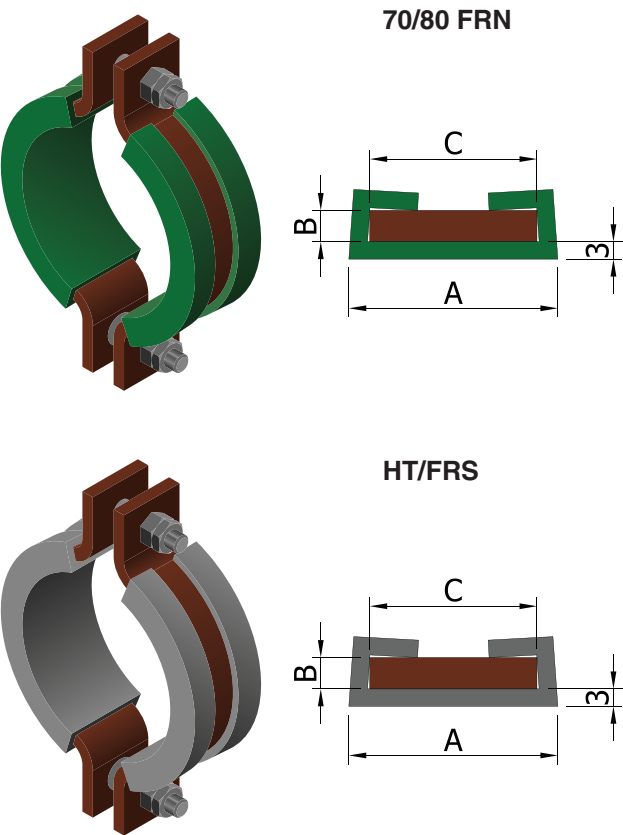


Fig. 611

Part Number		A	B	C
		mm	mm	mm
611-025x06-FRN	611-025x06-HTFRS	30	6	25
611-030x05-FRN	611-030x05-HTFRS	35	5	30
611-035x06-FRN	611-035x06-HTFRS	40	6	35
611-040x06-FRN	611-040x06-HTFRS	45	6	40
611-040x10-FRN	611-040x10-HTFRS	45	10	40
611-050x06-FRN	611-050x06-HTFRS	55	6	50
611-050x10-FRN	611-050x10-HTFRS	55	10	50
611-050x12-FRN	611-050x12-HTFRS	55	12	50
611-065x10-FRN	611-065x10-HTFRS	70	10	65
611-080x10-FRN	611-080x10-HTFRS	85	10	80
611-100x06-FRN	611-100x06-HTFRS	105	6	100
611-100x10-FRN	611-100x10-HTFRS	105	10	100
611-100x12-FRN	611-100x12-HTFRS	105	12	100
611-100x20-FRN	611-100x20-HTFRS	105	20	100

(Images above are examples of usage. Clamp not supplied).

- Material:
- Witchliner – 70/80 FRN or HT/FRS
- Order by:
- Part number and length
- Available:
- Cut to desired length or any length up to 25m

WITCHLINER WRAP-AROUND LINED CLAMP STRIP

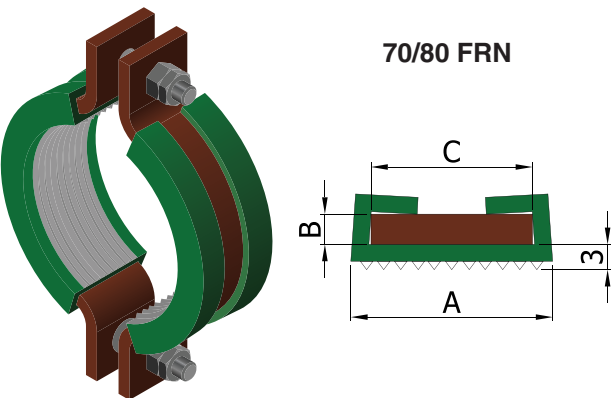


Fig. 612

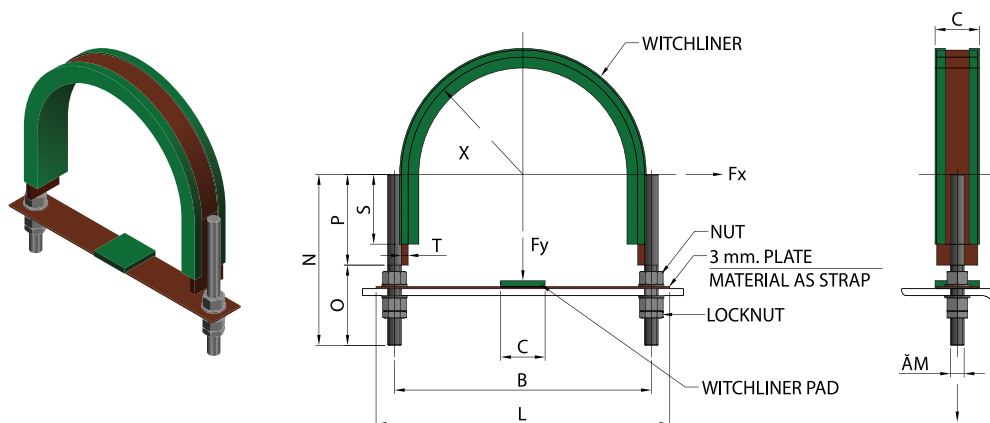
Part Number	A	B	C
	mm	mm	mm
612-025x06-FRN	30	6	25
612-030x05-FRN	35	5	30
612-035x06-FRN	40	6	35
612-040x06-FRN	45	6	40
612-040x10-FRN	45	10	40
612-050x06-FRN	55	6	50
612-050x10-FRN	55	10	50
612-050x12-FRN	55	12	50
612-065x10-FRN	70	10	65
612-080x10-FRN	85	10	80
612-100x06-FRN	105	6	100
612-100x10-FRN	105	10	100
612-100x12-FRN	105	12	100
612-100x20-FRN	105	20	100

(Image above is an example of usage. Clamp not supplied).

- Material:
- Witchliner – 70/80 FRN
- Order by:
- Part number and length
- Available:
- Cut to desired length or any length up to 25m

WITCHLINER INSULATED U-STRAP (TO GRIP)

70/80 FRN & HT/FRS



Material: U-strap - carbon steel or stainless steel
Witchliner - 70/80 FRN or HT/FRS

Surface finish: U-strap, nuts & bolts - (carbon steel) hot dip galvanised in accordance with ASTM A123

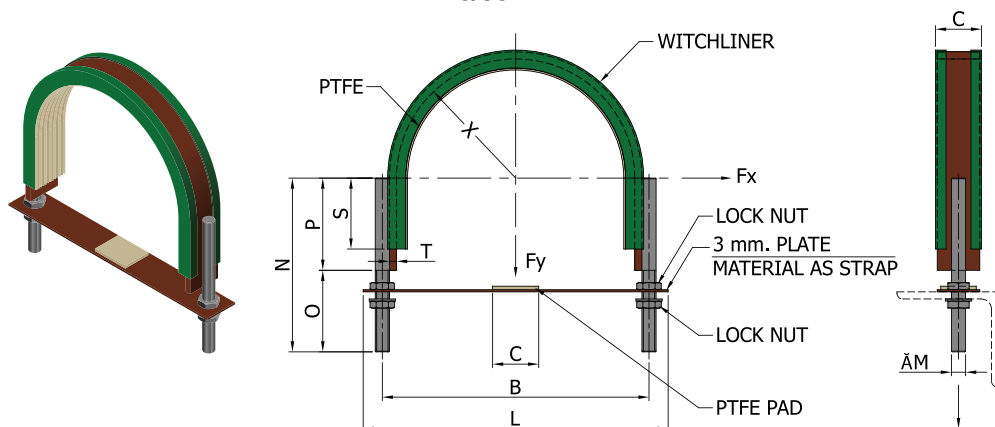
Order by: Part number, length and U-strap material

Fig. 613

Part Number		PIPE SIZE		X	L	B	C	STRAP T	S	STUD SIZE				MAX LOAD	
70/80 FRN	HT/FRS	NB (mm)	OD (mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	M (mm)	N (mm)	O (mm)	P (mm)	Fy (kg)	Fx (kg)
613-50-FRN	613-50-HTFRS	50	60.3	35	92	130	50	6	15	10	80	65	15	1520	350
613-80-FRN	613-80-HTFRS	80	88.9	50	124	165	50	6	25	12	95	70	25	2240	300
613-100-FRN	613-100-HTFRS	100	114.3	62	148	190	50	6	30	12	115	85	30	2240	250
613-125-FRN	613-125-HTFRS	125	141.3	76	176	225	50	6	35	12	130	95	35	2240	200
613-150-FRN	613-150-HTFRS	150	168.3	89	206	260	50	6	45	16	155	100	55	4180	250
613-200-FRN	613-200-HTFRS	200	219.1	116	260	310	50	6	60	16	180	100	80	4180	200
613-250-FRN	613-250-HTFRS	250	273	143	326	380	65	10	70	20	210	110	100	6620	400
613-300-FRN	613-300-HTFRS	300	323.9	168	376	430	65	10	90	20	245	115	130	6620	350
613-350-FRN	613-350-HTFRS	350	355.6	184	408	460	65	10	100	20	260	110	150	6620	300

WITCHLINER INSULATED U-STRAP WITH PTFE (NOT TO GRIP)

70/80 FRN



Material: U-strap - carbon steel or stainless steel
Witchliner - 70/80 FRN

Surface finish: U-strap, nuts & bolts - (carbon steel) hot dip galvanised in accordance with ASTM A123

Order by: Part number, length and U-strap material

Fig. 614

Part Number	PIPE SIZE		X	L	B	C	STRAP T	S	STUD SIZE				MAX LOAD	
	NB (mm)	OD (mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	M (mm)	N (mm)	O (mm)	P (mm)	Fy (kg)	Fx (kg)
614-50-FRN	50	60.3	35	92	130	50	6	15	10	80	65	15	1520	160
614-80-FRN	80	88.9	50	124	165	50	6	25	12	95	70	25	2240	190
614-100-FRN	100	114.3	62	148	190	50	6	30	12	115	85	30	2240	140
614-125-FRN	125	141.3	76	176	225	50	6	35	12	130	95	35	2240	110
614-150-FRN	150	168.3	89	206	260	50	6	45	16	155	100	55	4180	230
614-200-FRN	200	219.1	116	260	310	50	6	60	16	180	100	80	4180	170
614-250-FRN	250	273	143	326	380	65	10	70	20	210	110	100	6620	270
614-300-FRN	300	323.9	168	376	430	65	10	90	20	245	115	130	6620	230
614-350-FRN	350	355.6	184	408	460	65	10	100	20	260	110	150	6620	210
614-400-FRN	400	406.4	209	458	511	80	10	110	20	285	105	180	6620	180
614-450-FRN	450	457.2	235	514	571	80	10	120	24	320	130	190	9480	280
614-500-FRN	500	508	260	564	621	80	10	130	24	345	130	215	9480	250
614-600-FRN	600	609.6	311	666	726	100	10	140	24	400	145	255	9480	200



Carpenter & Paterson (Asia) Ltd
Bangkok Free Trade Zone – 88/91 Moo 15
Bangsaothong
Samuthprakarn
10570 Thailand

Tel: +66 (0) 2182 5204
Email: info@cp-ltd.co.th
www.cpa-pipesupports.com



Worldwide Manufacturing Locations:

- Thailand - Carpenter & Paterson (Asia) Ltd
- UK - Carpenter & Paterson Limited
- India - Carpenter & Paterson India PVT Ltd

CPA Sales Director
Jonathan Jones
j.jones@cp-ltd.co.th

SALES OFFICES:

ASIA:

China: cpchina@cp-ltd.co.th
India: guna@cp-ltd.co.th
Indonesia: cpindonesia@cp-ltd.co.th
Japan: aaron@cp-ltd.co.th
Korea: cpk@cp-ltd.co.th
Malaysia: cpmalaysia@cp-ltd.co.th
Philippines: cpp@cp-ltd.co.th
Singapore: llee@cp-ltd.sg
Taiwan: cpt@cp-ltd.co.th
Thailand: cpthailand@cp-ltd.co.th
Vietnam: cpvietnam@cp-ltd.co.th

OCEANIA:

Australia: cpaus@cp-ltd.co.th



EUROPE (CARPENTER & PATERSON LIMITED, UK):

All of Europe: info@cp-ltd.co.uk

NORTH AND CENTRAL AMERICA:

USA: Sales Director USA – Jeff Bowers: j.bowers@cp-ltd.co.th
Texas & Louisiana: cphouston@cp-ltd.co.th
Kansas & Missouri: cpkansas@cp-ltd.co.th
New England: cpboston@cp-ltd.co.th
Mid Atlantic: cpmidatlantic@cp-ltd.co.th
Southeast: cpsoutheast@cp-ltd.co.th
West Coast: cpcalifornia@cp-ltd.co.th

Mexico: cpmexico@cp-ltd.co.th

MIDDLE EAST:

cpmiddleeast@cp-ltd.co.th